



Participant Handbook

Sector
Food Processing

Sub-Sector
Multisectoral

Occupation
Processing

Reference ID: **FIC/Q9001, Version 3.0**
NSQF Level 4



**Processed Food
Entrepreneur**

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Shri Narendra Modi
Prime Minister of India

“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”



Certificate
**COMPLIANCE TO
QUALIFICATION PACK - NATIONAL OCCUPATIONAL
STANDARDS**

is hereby issued by the
Food Industry Capacity & Skill Initiative
for
SKILLING CONTENT : PARTICIPANT HANDBOOK

Complying to National Occupational Standards of
Job Role/ Qualification Pack: "Processed Food Entrepreneur" 'QP No. FIC/Q9001, NSQF Level 4

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*Valid up to the next review date of the Qualification Pack

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Food Industry Capacity & Skill Initiative

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We also wish to extend our gratitude to all authors who reviewed the content and provided valuable inputs for improving the quality, coherence, and content presentation in chapters.

The preparation of this participant handbook would not have been possible without the support of the Food Processing Industries. The Industry feedback has been extremely encouraging from inception to conclusion & it is with their inputs that we have tried to bridge the skill gaps existing today in the Industry.

This participant handbook is dedicated to all the aspiring youth who desire to achieve special skills which would be a lifelong asset for their future endeavors and help them make a bright career in the Food Processing Sector.

About this book

This Participant Handbook is designed to enable training for the specific Qualification Pack (QP). Each National Occupational (NOS) is covered across Unit/s.

This book is designed to enable a candidate to acquire skills that are required for employment. The content of this book is completely aligned to the National Occupation Standards QP/NOS and conform to the National Skills Qualification Framework (NSQF).

The Qualification pack of Processed Food Entrepreneur, Level 4 includes the following NOS's which have all been covered across the units

1. **FIC/N9005:** Evaluate and develop entrepreneur skills
2. **FIC/N9006:** Selection of product and business planning
3. **FIC/N9007:** Prepare for start up of food processing unit
4. **FIC/N9008:** Start food processing unit
5. **FIC/N9009:** Complete documentation and record keeping related to processed food entrepreneur
6. **FIC/N9010:** Ensure food safety, hygiene and sanitation
7. **DGT/VSQ/N0102:** Employability Skills (60 Hours)

Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS. The symbols used in this book are described below.

Symbols Used



Key Learning
Outcomes



Steps



Exercise



Notes




Unit
Objectives

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1. Evaluate and Develop Entrepreneurship Skills



Unit 1.1 – Introduction to the Training Program

Unit 1.2 – Introduction to the Food Processing Industry

Unit 1.3 – Overview of the **“Processed Food Entrepreneur”** Role

Unit 1.4 – Introduction to Entrepreneurship

Unit 1.5 – Professional and Core Skills

Unit 1.6 – IT Skills

Unit 1.7 – Evaluate and Develop Entrepreneur Skills



Key Learning Outcomes



At the end of this module, participants will be able to:

1. Explain the purpose of training
2. State the roles and responsibilities of a processed food entrepreneur
3. State the standard operating procedures in food processing units
4. Define food processing
5. List the various sectors of the food processing industry
6. Describe the market trends for processed food products
7. Describe the concept of entrepreneurship
8. State the benefits of entrepreneurship
9. Explore opportunities in the field of business
10. Describe the role of communication and behaviour in a business relationship
11. State the importance of professional and core at the workplace
12. Discuss how to complete the given work within the stipulated time period
13. Identify the basic parts of a computer
14. Identify the basic parts of a keyboard
15. Recall basic computer terminology
16. Recall the functions of basic computer keys
17. Discuss the main applications of MS Office
18. Discuss how to identify new business opportunities
19. Discuss how to identify business opportunities within your business
20. List the characteristics of entrepreneurs
21. Discuss how to manage an enterprise
22. Describe how to conduct market research

Unit 1.1: Introduction to the Training Program

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain the purpose of training
2. Discuss the National Occupational Standards and Qualification Pack

1.1.1 Purpose and Benefits of the Training Programme

This training programme is developed to impart specific skills to individuals who wish to be a Processed Food Entrepreneur. The training programme is based upon the National Occupational Standards for the food processing sector. The National Occupational Standards have been described in the following subsection of this chapter.

The training programme will enable an individual to

- Evaluate and develop entrepreneur skills;
- Select product and plan business;
- Prepare for start up of food processing unit;
- Start food processing unit;
- Complete documentation and record keeping;
- Ensure food safety, hygiene and sanitation.

After successful completion of training and passing the assessment, you will be issued a certificate.

1.1.2 Introduction of the Training Programme

This training programme is intended for imparting basic skill and knowledge relevant to the job role, required to perform at a food processing industry. This programme is based on qualification pack called Processed Food Entrepreneur. The Qualification Pack Code for Processed Food Entrepreneur is FIC/Q9001.

Unit 1.2: Introduction to the Food Processing Industry

Unit Objectives



At the end of this unit, participants will be able to:

1. Define food processing
2. List the various sectors of the food processing industry
3. Describe the market trends for processed food products

1.2.1 Food Processing

Agriculture is the backbone of the Indian economy. The produce from various agriculture-based occupations is primarily used for consumption within the country. It is exported to different parts of the world as well. Agricultural produce is also used as raw material in the food processing industry.

Food processing is the method used to convert raw materials into food products. They could be processed foods, ready-to-eat foods, food additives or foods used to prepare other food products. Besides food processing, the food industry also relies on food preservation as an important method to store food products for longer periods of time.

The food processing industry in India is divided into several sub-sectors. They are:

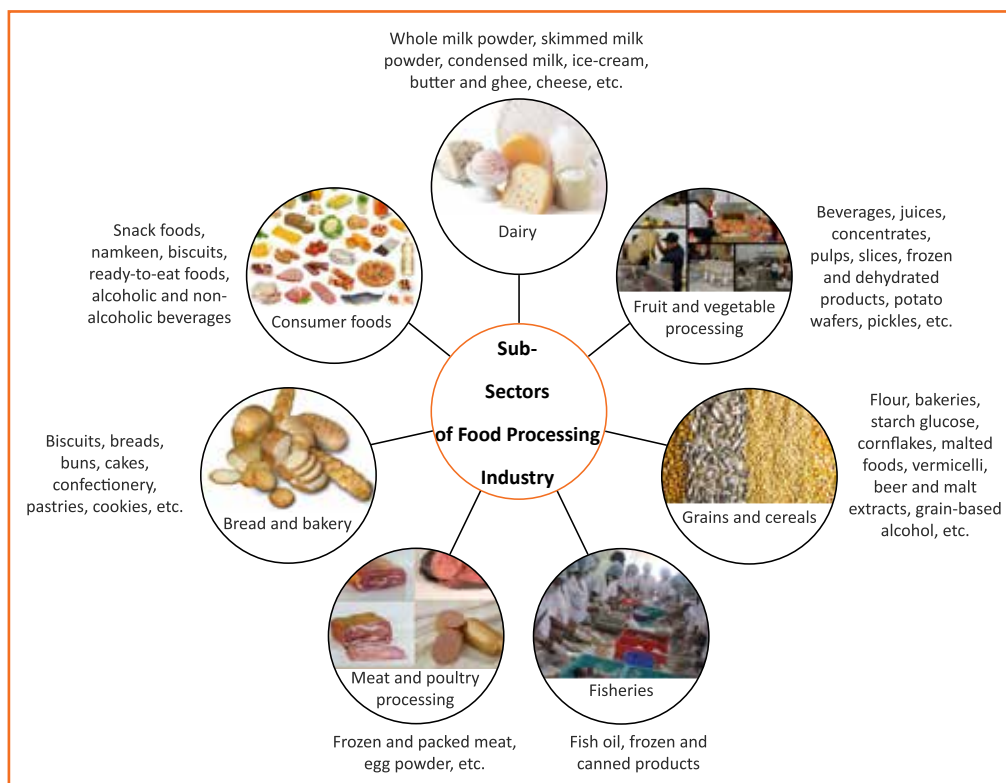


Fig 1.2.1: Sub-Sectors of food processing industry

The Indian food industry is a star sector in India with bright prospects for growth and development. The Indian food and grocery market is the sixth-largest in the world. The food industry, particularly the food processing sector in India, has shown immense potential due to its quick-paced growth. Food processing ranks fifth in the country in terms of its production, growth, export, and consumption. One of the recent trends that is seen in this sector is the online ordering of food. Even though this segment is still in its early stages of development, it is growing at an increasingly fast pace.

The food industry is implementing stringent food safety and quality measures in order to attract more investors and ensure the safety of its existing consumers. All these factors will have a positive impact on the way the sector functions and also on the job market in the country.

1.2.2 Journey of Food from Harvest to Consumer

The following chart shows the journey that food material goes through to become a final, consumable product to various customers.

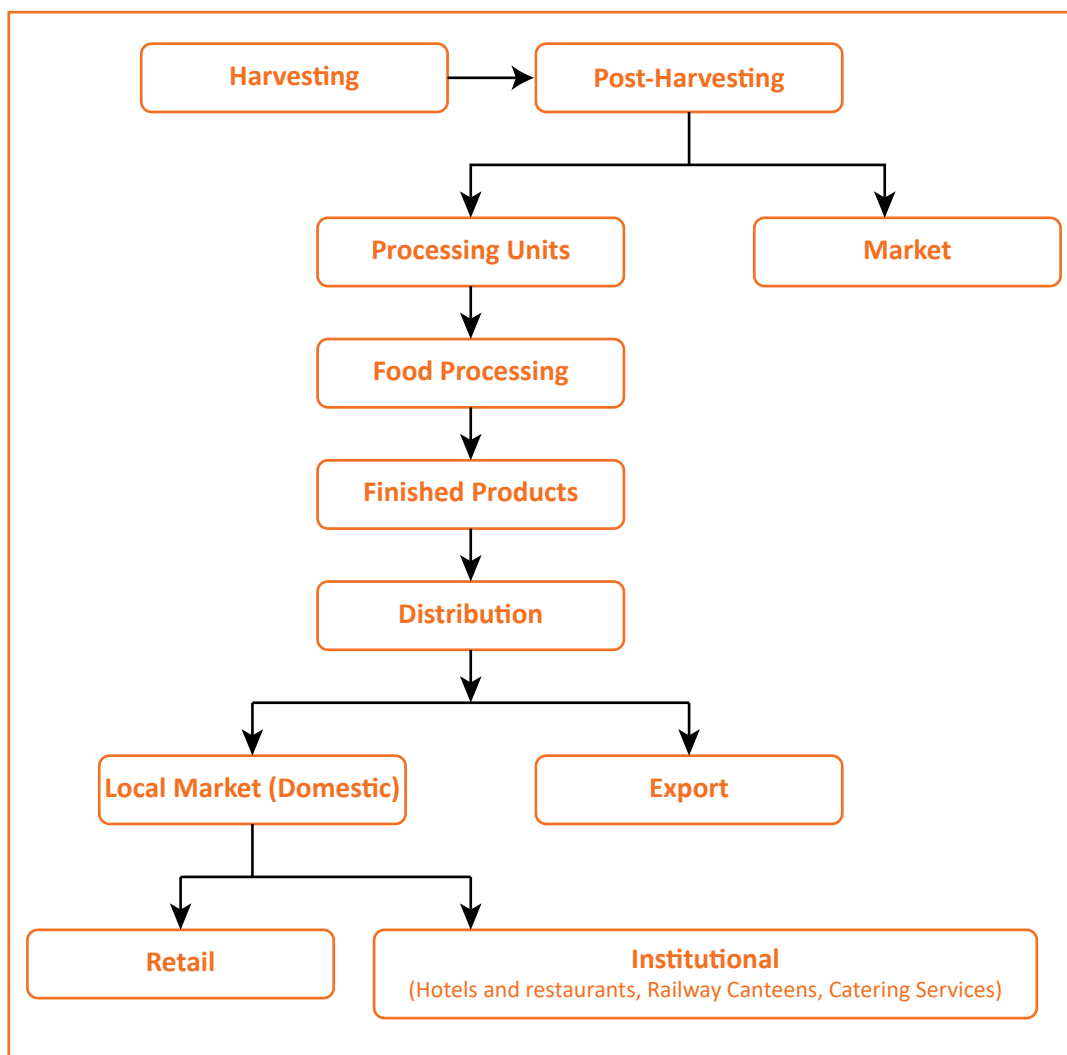


Fig 1.2.2: Journey of harvested food

1.2.3 Indian Food Processing Industry Market

The food processing industry forms a major part of India's economy owing to the variety of food products that the country harvests and further processes for consumption. India is the largest producer of milk, bananas, mangoes, guavas, papaya, ginger, okra; second-largest producer of wheat, rice, fruits, vegetables, tea, sugarcane and cashew nuts and the third-largest producer of cereals, coconut, lettuce, chicory, nutmeg, mace, cardamom and pepper worldwide. Rising incomes and a growing demand for healthy, packaged food ensure that this industry is likely to sustain all seasons and never fear a recession. The industry also receives growing support from the government.

Market Stats

- India's food processing sector is one of the largest in the world and its output is expected to reach US\$ 535 billion by 2025-26.
- This sector is expected to generate 9 million jobs by 2024.
- The Indian food industry is expanding at a CAGR of 11% and the food processing sector accounts for 32% of the total food industry.
- India's food sector attracted US\$ 4.18 billion in foreign direct investments between April 2014 and March 2020.
- By 2030, Indian annual household consumption is expected to triple, making India the fifth-largest consumer in the world.

Key growth drivers & trends

- There is growth in the organised food retail sector and increase in urbanisation.
- MSME's are playing a vital role in India's food processing chain through various advancements in skills and technology.
- The online food ordering business in India is witnessing an exponential growth.
- There is high demand for packaged, healthy and immunity booster snacks such as roasted nuts, popcorns, and roasted pulses.
- There is a shift in focus from loose to branded packaging.
- The government's 'Atmanirbhar Bharat' initiative places priority on this sector and offers support through various policies.

The Indian Government, in the 'Make in India' campaign, has prioritised the food processing sector and promotes investments in the sector. In addition, the government has established 18 mega food parks and 134 cold chain projects to develop the food processing supply chain. These initiatives are likely to boost food processing companies. Also, the recent government initiatives—such as Rs. 10,000 crore scheme rolled out by the Finance Minister, Mrs. Nirmala Sitharaman, to support this industry—have placed the food processing sector on a high growth trajectory.

1.2.4 Ministry of Food Processing Industries

The Ministry was set up in 1998 and the industry segments that come under its purview are:

- Fruit and Vegetable processing (including freezing and dehydration)
- Grain Processing
- Processing of Fish (including canning and freezing)
- Processing and refrigeration of certain agricultural products, dairy products, poultry and eggs, meat and meat products
- Industries related to bread, oilseeds, meals (edible), breakfast foods, biscuits, confectionery, maltextract, protein isolate, high protein food, weaning food and extruded food products (including other ready-to-eat foods)
- Beer, including non-alcoholic beer
- Alcoholic drinks from non-molasses base
- Aerated water and soft drinks
- Specialised packaging for food processing industries.

Scan the QR code or click on the link to watch related videos



www.youtube.com/watch?v=ofzhEPi0pSI
Orientation



www.youtube.com/watch?v=wMu0EpUgCd4&t=19s
Overview of food processing industry

Unit 1.3: Overview of the “Processed Food Entrepreneur” Role

Unit Objectives



At the end of this unit, participants will be able to:

1. State the roles and responsibilities of a processed food entrepreneur
2. State the standard operating procedures in food processing units

1.3.1 Roles and Responsibilities

The following table explains the roles and responsibilities of a Processed Food Entrepreneur.

- Explore the market to identify opportunities and building on it
- Create and establish a food processing organisation
- Innovate and give a different dimension to a product or process
- Start and manage a business
- Work towards making a profit by marketing and selling the product(s)

Scan the QR code or click on the link to watch related videos



www.youtube.com/watch?v=nr_FM8esZJE

Roles and Responsibilities of a “Processed Food Entrepreneur”

Unit 1.4: Introduction to Entrepreneurship

Unit Objectives

At the end of this unit, participants will be able to:

1. Describe the concept of entrepreneurship
2. State the benefits of entrepreneurship
3. Explore opportunities in the field of business

1.4.1 Concept of Entrepreneurship

Entrepreneurship is doing something new. A person who starts a truck service in an area where there are no trucks, a man who develops salt pans where they do not exist, an inventor who invents a new product are all entrepreneurs. They are doing something new. Entrepreneurship is different from running a business. A man, who runs a textile factory inherited from his father, is a businessman. He is hardly an entrepreneur.

Usually, entrepreneurship has a profit motive behind it. When there is no profit motive, and it is done for the good of the community, it becomes Social Entrepreneurship. A man who starts a free school in an area where there is low literacy may not expect any returns or profit from the school. He is doing it with a motive of benefiting his village or community. He is a Social Entrepreneur.

Who is an entrepreneur?

An entrepreneur is one who creates a new business in the face of risk and uncertainty for achieving profit and growth opportunities and assembles the necessary resources to capitalise on those opportunities.

Traits of an entrepreneur

- Desire for responsibility
- Preference for moderate risk
- Confidence in their ability to succeed
- Desire for immediate feedback
- High level of energy
- Future orientation (serial entrepreneurs)
- Skill in organisation
- Value of achievement over money
- High degree of commitment
- Flexibility
- Willingness to accept risk, work hard and take action

The benefits of entrepreneurship

The primary benefits entrepreneurs enjoy include the opportunity to

- Create your own destiny
- Create a new product or service
- Make a difference to the society
- Generate impressive profits
- Do what you enjoy and have fun at it!

1.4.2 Business Opportunities in Entrepreneurship

Exploring Opportunities

Opportunity is defined as an uncertainty that could have a positive effect on a business leading to benefits or rewards. An opportunity if not availed at an appropriate time may become a threat in the long run as it may be harnessed later by the competition. At a time several opportunities may co-exist in the market and a marketer may have to prioritise and identify the right opportunities that he can serve. Focus on the right opportunities brings a strategic advantage into the business while inability to do so makes the business vulnerable to competitive forces.

Opportunities and threats refer to external factors that can affect the future of business over which it has no control. Opportunities are observed trends/possible trends in the environment, which are attractive to the firm. Threats are observed/possible trends in the environment that could be detrimental to the firm. Failure to identify opportunities and threats could lead to a position of stagnation.

Assessing opportunity means finding out how big a particular opportunity is. If a rural entrepreneur decides to start a bicycle repair shop, before making any investments, he should have a good idea as to how much money he can make from it. He should also be aware of the capital investments that he would have to make.

Assessing opportunity means finding out the demand for ready to eat food. In order to do that, he/she first has to estimate the number of food packets, the frequency of sale, the different types of ready to eat meals possible and the prices he/she can charge.

Opportunity analysis in steps

- The first and foremost step in opportunity analysis is to prioritise the available opportunities on the basis of their gross market potential.
- The business may select the most promising opportunity by estimating the available market upon excluding the already served market. The served market is usually captured by direct or indirect competition.
- The business then defines the value it can provide to the customers within the available market. On the basis of the value proposition it wants to offer, the business defines the market segment to be served.

- The size of the market segment needs to be estimated to understand the actual potential of the business proposition.
- The next step is of targeting the identified market segment with appropriate marketing mix and market strategy. It involves decisions like product and service features, pricing, promotion and distribution channel.

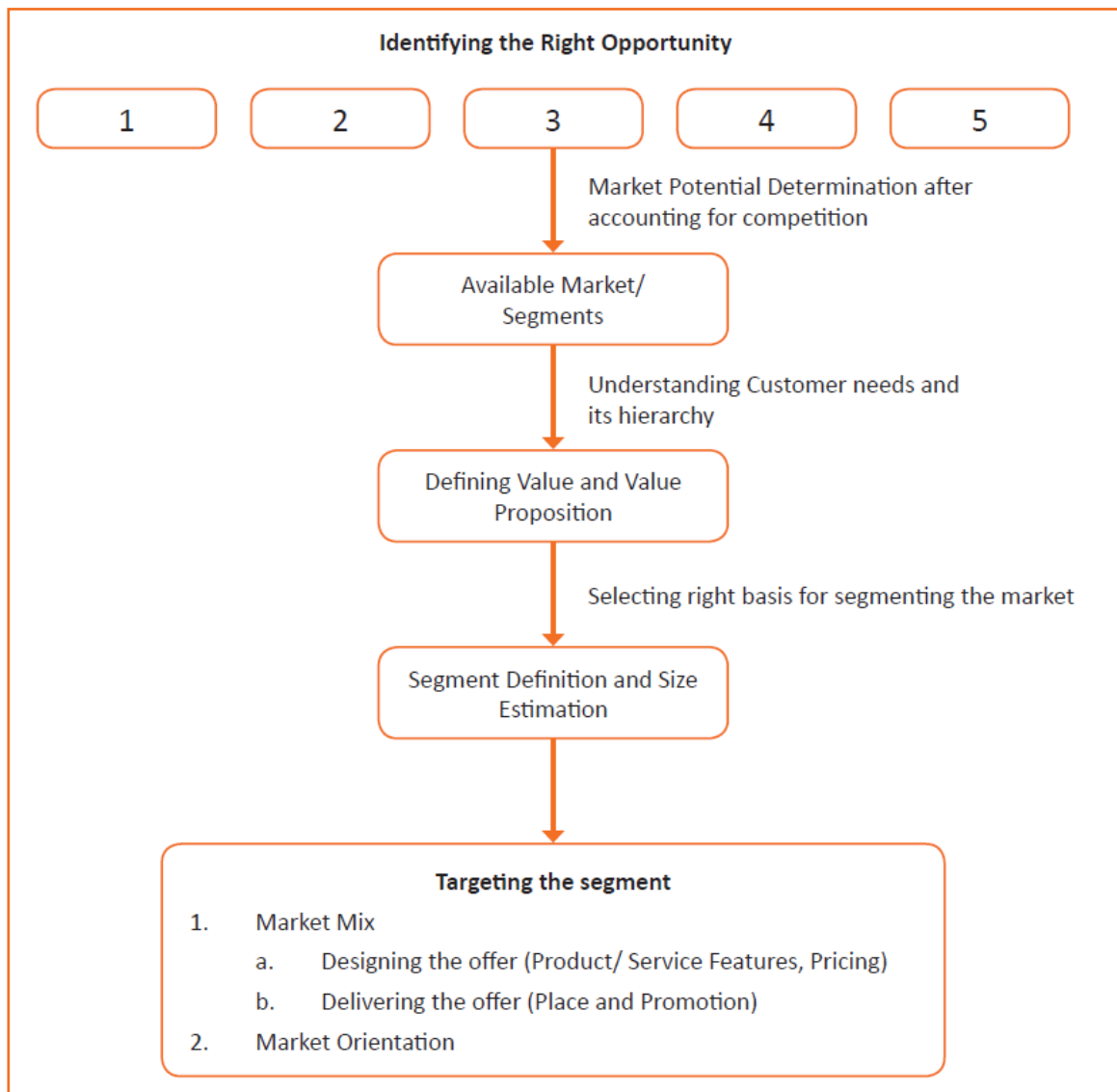


Fig 1.4.1: Business opportunities analysis

Activity

1. List down the benefits of being the part of an entrepreneurship journey

2. Why do you want to become an entrepreneur?

3. With the help of internet, prepare a list of sectors which fall into food processing industry

4. In which sector of food processing industry, want to start your venture? Give reasons for the same.

Scan the QR code or click on the link to watch related videos



<https://www.youtube.com/watch?v=Z0IT0h0IRwk>

Traits of an entrepreneur

Unit 1.5: Professional and Core Skills

Unit Objectives

At the end of this unit, participants will be able to:

1. Describe the role of communication and behaviour in a business relationship
2. State the importance of professional and core skills at the workplace
3. Discuss how to complete the given work within the stipulated time period

1.5.1 Communication Skills

Communication is being able to clearly state one's thoughts or message to another person. Communication is the process by which people exchange information and feelings through verbal and non-verbal messages. The act of communication requires skills such as speaking, listening, observing, questioning, processing, analyzing and evaluating.

Communication consists of two aspects, verbal and non-verbal.

Verbal communication includes all the spoken elements. Verbal communication is

- The use of sounds and language to convey a message.
- It helps us express our desires, ideas and concepts through words.

Verbal communication which result in achieving positive interpersonal skills are

- Voice
- Intensity
- Sounds
- Giving criticism in a positive manner

Non verbal communication includes body language, gestures, facial expressions, eye contact, etc., which also become a part of the communicating process; as well as the written and typed modes of communications.

Non-verbal communication which result in achieving positive interpersonal skills are

- Smile and eye contact
- Use of correct postures and gestures
- Touch
- Listening is an activity of paying attention to and trying to get meaning from something we hear
- It patiently conveys that **“you care”**
- It enables you to understand other people's viewpoints and empathize with their situation

Communication is successful only when both the sender and the receiver understand the same

information as a result of the communication. If there is clarity in communication, that means the goal of communication will be achieved.

Do's and Don'ts of Communication

Do's	Don'ts
Smile	Avoid having an unkind expression
Keep your arms open - Shows positive body language	Do not keep hands on hip - Shows aggressive body language
Be friendly in tone of voice even while teasing your friends	Do not use challenging tone of voice
Welcome juniors	Do not show lack of courtesy in choice of words used
Speak slowly and clearly	Do not be nervous or speak fast
Be respectful in your choice of words	Do not use rude words
Be genuine	Do not use over-polite language; it seems affected

Table 1.5.1: Do's and don'ts of communication

1.5.2 Listening

Listening

Active listening is one of the important skill of our communication process but many time as a communicator we spend our energy on what we wanted to say and not much focusing on what the other party wanted to say. Listening is basically the ability of a person to receive message properly and accurately interpret it in the communication process. Listening is considered as the key



Fig 1.5.1: Listening practice

factor for successful communication process. If we do not give much important to listening messages can be easily misunderstood and can lead to communication break down because sender of the message may become frustrated.

Let's now learn to use effectively each of these for successful interactions with others. Now let's explore listening skills further.

Tips for Listening

Follow these tips to become an attentive listener

- **Focus on the speaker:** Pay attention to what the speaker is saying. Look directly in the eye of your speaker.
- **Take notes:** This will help you stay alert.
- **Reconfirm and ask questions:** Always reconfirm your understanding by repeating the information that was shared with you. Ask questions to understand the message better. These tips will ensure that you heard what was said.
- **Remove Distractions:** Focus on the instruction received. We should avoid mobile phone use, shuffling paper, looking outside from window or other similar activities. If you are performing these activity, listening process get disturbed and speaker will get a message that you are not taking interest.

Remember, if we were to talk more than we listen, we would have two tongues and one ear.

1.5.3 Writing

Writing

Writing forms an important form of communication. A better writing skill allows our messages to be communicated effectively with clarity. It is also having advantage to spread it to a larger audience comparatively face to face or telephonic discussion. Writing is considered as one of the ancient medium of communication by representing syntax and symmetric of language we are using and adding emotion using signage and symbols.

Do's and Don'ts of Written Communication

Use the following do's and don'ts for written communication

- Use simple language
- Highlight important words
- Use appropriate salutation and greeting
- Keep your sentences short and to the point
- Proof read the text before sharing



Fig 1.5.2: Writing practice

Here are the additional tips that you may consider for your written communication:

- Do write with the reader in mind. If you're writing about a technical subject for a non-technical reader, avoid using technical jargon and acronyms they may not know. If possible, explain concepts in a way that your reader can relate to.
- Be clear about what you are actually trying to communicate. Use short words and sentences to get across your point. It can be useful to use a list of bullet points rather than paragraph to make it easier to read and understand the information.
- Use salutation – Sir/Ma'am, Mr./Mrs./Ms., etc. – and Greeting – Good Morning, Hi, etc.
- Choose an appropriate font and size for your writing. Wingdings and Comic Sans are obviously out and anything less than 8-point will give your readers a headache.

1.5.4 Time Management

We achieve outcome of our 24 hours period based on our enthusiasm, energy levels, ability to perform, skills and other resources

As our time is always in demand, we need to think about how to use our time and for more effective time management we need to consider certain strategies. Time management does not mean to work harder or for longer period but it help us to work smartly so that we can finish our work easily and quickly.

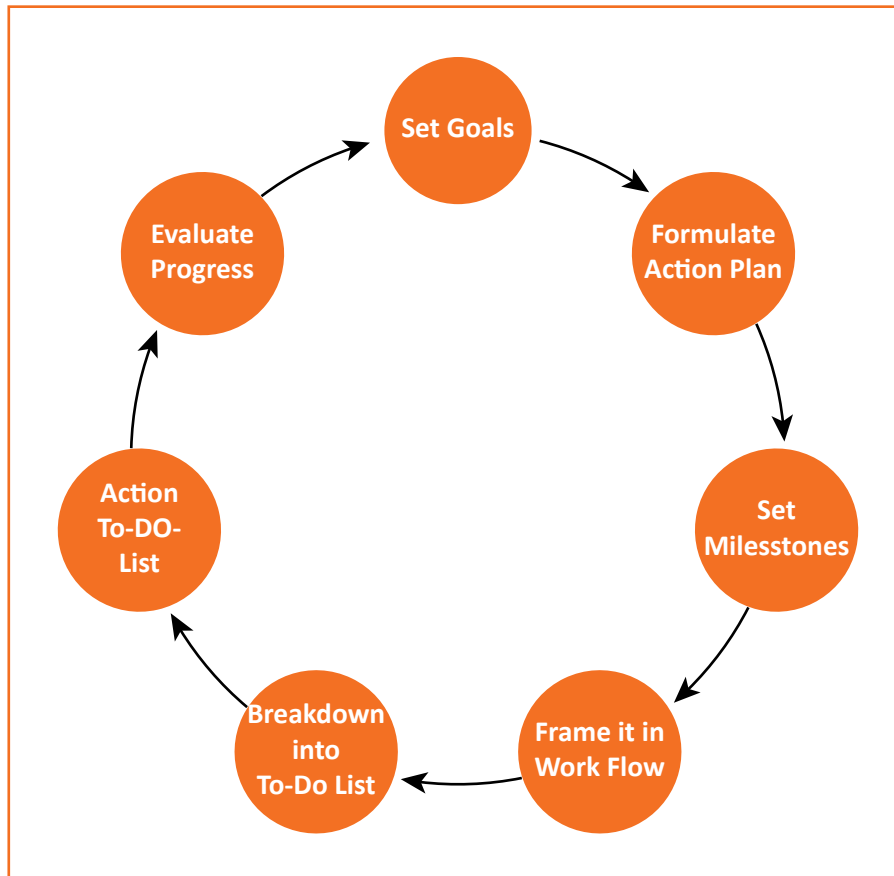


Fig 1.5.3: Time management

If we can manage our time more effectively, we will be rewarded in a variety of ways

- We will be more competent in our routine job and also can support others
- We can accomplish great success in every role as a leader
- On a personal level, you will certainly feel healthier, more energetic, and in a generally better mood.

Obstacles to Effective Time Management

There are many factors contributing to disturbance due to which it becomes for us in effective management of our time. Now think about certain common factors, and let us see does it apply to us

- **Objective is not clear:** With closed eyes it is difficult to hit a target thus it is equally difficult to accomplish something when you aren't exactly clear about what you want to achieve.
- **Disorganization:** It's easy to see when your desk is too messy, but sometimes you have to step back and ask yourself if you are taking an organized approach in completing all of your tasks.
- **Inability to Say "No":** We need to be helpful; towards others when they need our support,

but this needs time and could result in disturbing our priorities to do something we may not have planned.

- **Interruptions:** Some time it happens that when are in the middle of accomplishing something which is very important for, we get a phone call. These calls are very disturbing as it could play an import reason to be behind the schedule as it may interrupt our though process which can lead to go back from where we started or in between somewhere.
- **More Interruptions:** Inappropriate time conversations need our time thus we need to be careful and have to stop what we are doing and focus on plans.
- **Periods of Inactivity:** As much as we think we are busy, there are times in our day when we are not really doing anything. Recognizing and making use of these times can have a positive effect on our efforts.
- **Too Many Things at Once:** Most of us work without making routine of our task as it needs our attention for detailing. When we try to do so many things simultaneously each individual task get suffer.
- **Stress and Fatigue:** We all experience stress time to time in our daily life and we perform well with a little bit stress. If the level of stress is very high, our works get suffered and also effect mental and physical situation. How to deal with stress forms an important factor of time management.
- **All Work and No Play:** Most successful people know how to balance work and play. When work takes over your life, you may end up sacrificing the really important things in life like family and friends. Therefore, give your body little time to re-energize and enjoy life.

How to Resolve Obstacles

The obstacle we face in our day to day life is not very difficult to resolve. The most important thing is to identify existence of obstacle which is affecting our ability in time management. After identifying the obstacle we start think solution to resolve it.

1.5.5 Set Clear Goals

- You will want to accomplish many things in your time of office. The greatest favor that you can do to yourself is to define what those targets are and ensure your struggles are always absorbed toward their accomplishment.
- Effective goals share a number of characteristics in common. Effective goals are
 - ❑ **Specific:** When a goal is too vague, you may never know how to grasp it or even when you have reached it. Ensure that you know exactly what you hope to achieve.
 - ❑ **Measurable:** When you have a goal that is measurable, you will know how far you have to go to reach the goal, and when you will get there.
 - ❑ **Achievable:** It is worthy to set your vision high, but sometimes we try to achieve more than we can actually do. Your goals should be such that, if you “**extend yourself**” you can just

reach them. For example, if a person weighing 100 kilos decides to lose 30 kilos in a month its absurd. Rather if he set a goal to lose 5 kilos each month that's achievable.

- ❑ **Realistic:** Your goal has to be real. Saying I will fetch the moon for you, as in many Bollywood movies is fictious. So set your goal that is realistic. You can refer to the same example of a person weighing 100 kilos. If he wants to build body like John Abraham or Hritik Roshan in a month it's unrealistic.
- ❑ **Time-based:** It is important to set time guidelines for your goals, so that you can keep track of your development as you are along and can be aware to when you are falling behind the schedule.



Fig 1.5.4: SMART Goals

1.5.6 Prioritize

As a part of organization, you will be assigned many tasks. It is always good and safe to clarify that you cannot do everything, thus it is important to make a list of tasks periodically that confront you and prioritize them. Below mentioned technique may help in prioritizing

- **Do:** Choose most important task from the list which you consider as important for your organization. These are the task you need to do yourself.
- **Delegate:** There could be many persons in an organization who possess various skills and experience to carryout variety of task. A real leader understand it very clearly that they cannot

accomplish everything by themselves. Thus they recognize someone who can better handle the task. Delegating not only helps to free up your time so that we can do other works but also ensures resources applied can be used more effectively through certain degree of motivation.

- **Delay until another time:** As a regular process we think something can wait and applying same thinking on too many things close to the dead line which creates a dangerous situation. It is always good to consider when things are due, how long it will take to accomplish and your current workload. Suppose you have to pay for your policy but still have time you can delay it but when it comes to deadline it may hamper your working process.
- **Delete:** If we set our goals as explained earlier, we will experience that some of these goals are not achievable or realistic, or that they are just not important. A good leader knows when to concentrate on the important and eliminate the rest.

When you prioritized your task it is important for you to

- **Address the urgent:** Things having short-term consequences should be tackled first.
- **Accomplish what you can early:** Reports, registrations and requests that can be handled early should come next. Don't put off until tomorrow what you can do today.
- **Attach deadlines to things you delay:** When we are very sure that things can definitely wait be careful in taking such decision by adding a deadline for that task in our schedule and should also make a note to remind our self about when we should start working on that.



Fig 1.5.5: Way of prioritizing works

1.5.7 Organize

As you prioritize tasks and set deadlines, you will want to organize your plans and actions. Some time we are using paper and pencil to organize our plans, but it is important for you in today's environment to use planner as it includes calendar and enough space to make notes. Most of the planners are equipped with calendar space, space to note down daily activities, contact information, and "to do" lists. Look for the planner which satisfy your need and start using it. You will feel like it is an essential tool for you to manage your time.

We can also consider device like computer to help in organizing our time. The modern computers are equipped with necessary features such as calendars, task lists, reminder, and contact details using software programs. In case you do not have these features in your computer you get it installed very easily.

You may also consider a small personal digital assistant, or PDA. These devices are small enough to fit in your hand, and use the same software your home computer uses. When we do not have computer access PDAs plays important role specially during travelling to keep you updated with your pending task.

Whatever method you choose, make sure you organize your tasks so that you can stay on track.

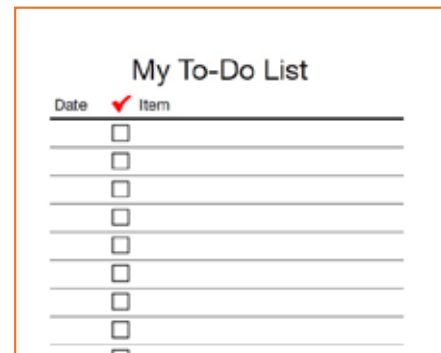


Fig 1.5.6: To-do list

1.5.8 Identify Personal Strength and Weaknesses

Find your strengths

To better understand your areas of strength, start by making a list of your

- **Skills:** These could be acquired from education and experience (e.g., computer skills, languages, degrees, certificates, and technical abilities).
- **"Soft" skills:** These are the skills that may not have be taught but you developed none-the-less (e.g., communication and social skills, problem solving abilities, and strategic skills)
- **Personal strengths:** These are your unique qualities (e.g., reliable, flexible, kind, hard working, creative, punctual, and positive).

Find your weaknesses

Each area of strength has a corresponding weakness if it is not developed. Next, make a list of weaknesses (or underdeveloped strengths) that would be helpful to achieve your goals. For example, maybe you're a bad cook. If that has nothing to do with your goals, then you don't need to list it as a weakness here.

To better understand your weaknesses, start by making a list of

- **Weak skills that you need:** Again, these could be acquired from education and experience.
- **"Soft" skills you need:** These skills were not developed naturally but you see how developing them could help you reach your goals or improve your well-being.
- **Personal weaknesses:** These are your unique challenges or the things you know you struggle

with. For example, I know that I am not very assertive and I have a hard time standing up for myself. These personal weaknesses are something I have to continually work on.

Activity 1

- Collect the three pages containing 24 squares on them from your facilitator.
- Fill the squares (based on the time you spend on various activities on a regular day) and label them with routine activities like -
 - Sleeping (6 hours is equal to 6 squares), bathing, eating, travel, and TV time
 - Non-reproductive time like long tea-breaks, water cooler chats, personal telephone calls and e-mails, etc.
- Productive time like reading something useful or brainstorming on important topic
- After filling all squares, identify time wasters and time spent on routine activities.
- Come up with as many ideas as possible to handle your time wasters.
- Share your findings with your facilitator in the next session.

Activity 2

Answer each of the following questions

Circle your answer for each question

Refer to the result of table given below and evaluate the result of your answers

Sl No.	Decision making skills	Mark where you stand (Circle your answer)					Write your result here
		Strongly Agree	Agree	Some-what Agree	Some-what Disagree	Strongly Disagree	
1	Desire to actively participate in the process of solving / improving a situation	5	4	3	2	1	
2	Too much analysis of situation result in delaying decision	5	4	3	2	1	

SI No.	Decision making skills	Mark where you stand (Circle your answer)					Write your result here
		Strongly Agree	Agree	Some-what Agree	Some-what Disagree	Strongly Disagree	
3	Respect other people's suggestion and recommendations	5	4	3	2	1	
4	Analyse and calculate the risk and problems which may occur after taking a decision	5	4	3	2	1	
5	Follow workplace rules and guidelines in situations involving high level of risk at work	5	4	3	2	1	
6	Use your job specification to take appropriate decision	5	4	3	2	1	
7	Do not hesitate to consult your supervisors and subordinates before arriving to a decision point	5	4	3	2	1	
8	Do not make workplace decision based on emotion	5	4	3	2	1	

Evaluate your answers after you complete the above table.

Check the result for each question if your answer is:

Score	Evaluation	Result
1-3	You need to work hard to develop this quality	Work hard
4	You possess this quality but need to enhance it for better success	Keep improving
5	You possess this quality and this is your strength use it to make timely and effective decision	Use this strength

MY Score	What should you do?

Activity 3

Create a to-do list to keep track of the job received identifying the priority

Sl No.	Date	Job Code/ number	Task/Activities	Target completion	Priority
1					
2					
3					
4					
5					
6					

Activity 4

Write your problem statement here (for eg: the output or product is not as per the desired quality and specifications) and use the template given to solve the problem.

Sl No.	Step to solve the problem	Notes for problem solving
1	Identify the problem	
	Identify what is wrong	
	Speak about it to your peers	
2	Analyse the problem	
	What is the issue?	
	Why did it happen?	
	When did it get noticed?	

Sl No.	Step to solve the problem	Notes for problem solving
3	Who is going to get affected by it	
	What is the current state and what is the desired state?	
	What are the steps that I should take to resolve the issue?	
	Am I following the steps and finishing on time?	
	What is getting in my way of reaching the desired outcome?	
4	Evaluate potential solutions	
	What are the different options that will solve the problem?	
	What are the positives and negatives of each option?	
5	Select the best solution and apply it	
	Which one do you think is the best solution?	
	How will you apply the best solution?	
6	Evaluate the applied solution	
	Was my solution the best one?	
	Did I have a better way of solving the issue?	
	Did I judge the problem correctly?	
	Could I stop the loss?	
	Can I apply this solution next time for a similar problem?	

Unit 1.6: IT Skills

Unit Objectives

At the end of this unit, participants will be able to:

1. Identify the basic parts of a computer
2. Identify the basic parts of a keyboard
3. Recall basic computer terminology
4. Recall the functions of basic computer keys
5. Discuss the main applications of MS Office

1.6.1 Computer Basics

A computer is an electronic, digital device used to process data, converting the data into information that is useful to People/users. A computer system consists of hardware and software components.

- Hardware is the physical equipment such as the case, storage drives, keyboards, monitors, cables, speakers, and printers.
- Software is the operating system and programs. The operating system instructs the computer how to operate.
- Programs or applications perform different functions.

Components of Computer

- **Central Processing Unit (CPU):** The brain of the computer. It interprets and carries out program instructions.
- **Hard Drive:** A device that stores large amounts of data.
- **Monitor:** The device that contains the computer screen where the information is visually displayed.
- **Mouse:** A hand-held device used to point to items on the monitor.
- **Speakers:** Devices that enable you to hear sound from the computer.
- **Printer:** A device that converts output from a computer into printed paper documents.



Fig 1.6.1: Computer components

Basic Parts of a Keyboard

- **Arrow Keys:** Press these keys to move your cursor.
- **Space bar:** Adds a space.
- **Enter/Return:** Moves your cursor to a new line.
- **Shift:** Press this key if you want to type a capital letter or the upper symbol of a key.
- **Caps Lock:** Press this key if you want all the letters you type to be capital letters. Press it again to revert back to typing lowercase letters.
- **Backspace:** Deletes everything to the left of your cursor.

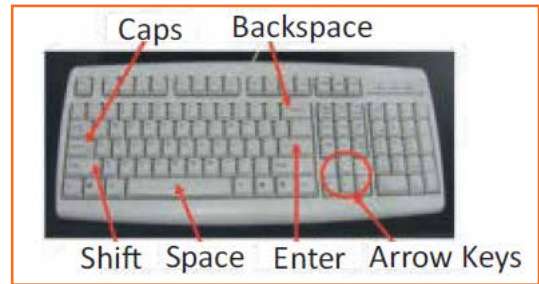


Fig 1.6.2: Keyboard

Basic Internet Terms

- **The Internet:** A vast, international collection of computer networks that transfers information.
- **The World Wide Web:** A system that lets you access information on the Internet.
- **Website:** A location on the World Wide Web (and Internet) that contains information about a specific topic.
- **Homepage:** Provides information about a website and directs you to other pages on that website.
- **Link/Hyperlink:** A highlighted or underlined icon, graphic, or text that takes you to another file or object.
- **Web Address/URL:** The address for a website.
- **Address Box:** A box in the browser window where you can type in a web address.

1.6.2 About MS Office

MS Office or Microsoft Office is a suite of computer programs developed by Microsoft. Although meant for all users, it offers different versions that cater specifically to students, home users and business users. All the programs are compatible with both, Windows and Macintosh.

Some of the most popular and universally used MS Office applications are:

- **Microsoft Word:** Allows users to type text and add images to a document.
- **Microsoft Excel:** Allows users to enter data into a spreadsheet and create calculations and graphs.
- **Microsoft PowerPoint:** Allows users to add text, pictures and media and create slideshows and presentations.
- **Microsoft Outlook:** Allows users to send and receive email.
- **Microsoft OneNote:** Allows users to make drawings and notes with the feel of a pen on paper.
- **Microsoft Access:** Allows users to store data over many tables.

Unit 1.7: Evaluate and Develop Entrepreneurship Skills

Unit Objectives

At the end of this unit, participants will be able to:

1. Discuss how to identify new business opportunities
2. Discuss how to identify business opportunities within your business
3. List the characteristics of entrepreneurs
4. Discuss how to manage an enterprise
5. Describe how to conduct market research

1.7.1 Entrepreneur and Entrepreneurship

Anyone who is determined to start a business, no matter what the risk, is an entrepreneur. Entrepreneurs run their own start-up, take responsibility for the financial risks and use creativity, innovation and vast reserves of self-motivation to achieve success. They dream big and are determined to do whatever it takes to turn their idea into a viable offering. The aim of an entrepreneur is to create an enterprise. The process of creating this enterprise is known as entrepreneurship.

Characteristic of an Entrepreneur

Anyone who is determined to start a business, no matter what the risk, is an entrepreneur. Entrepreneurs run their own start-up, take responsibility for the financial risks and use creativity, innovation and vast reserves of self-motivation to achieve success. They dream big and are determined to do whatever it takes to turn their idea into a viable offering. The aim of an entrepreneur is to create an enterprise. The process of creating this enterprise is known as entrepreneurship.

Characteristics of Entrepreneurs

All successful entrepreneurs have certain characteristics in common.

They are all

- Extremely passionate about their work
- Confident in themselves
- Disciplined and dedicated
- Motivated and driven
- Highly creative
- Visionaries
- Open-minded
- Decisive

Entrepreneurs also have a tendency to:

- Have a high risk tolerance
- Thoroughly plan everything
- Manage their money wisely
- Make their customers their priority
- Understand their offering and their market in detail
- Ask for advice from experts when required
- Know when to cut their losses

Types of Entrepreneurs

There are four main types of entrepreneurs

1. **The Traditional Entrepreneur:** This type of entrepreneur usually has some kind of skill –they can be a carpenter, mechanic, cook etc. They have businesses that have been around for numerous years like restaurants, shops and carpenters. Typically, they gain plenty of experience in a particular industry before they begin their own business in a similar field.
2. **The Growth Potential Entrepreneur:** The desire of this type of entrepreneur is to start an enterprise that will grow, win many customers and make lots of money. Their ultimate aim is to eventually sell their enterprise for a nice profit. Such entrepreneurs usually have a science or technical background.
3. **The Project-Oriented Entrepreneur:** This type of entrepreneur generally has a background in the Arts or psychology. Their enterprises tend to be focus on something that they are very passionate about.
4. **The Lifestyle Entrepreneur:** This type of entrepreneur has usually worked as a teacher or a secretary. They are more interested in selling something that people will enjoy, rather than making lots of money.

Types of Enterprises

As an entrepreneur in India, you can own and run any of the following types of enterprises

- **Sole Proprietorship:** In a sole proprietorship, a single individual owns, manages and controls the enterprise. This type of business is the easiest to form with respect to legal formalities. The business and the owner have no separate legal existence. All profit belongs to the proprietor.
- **Partnership:** A partnership firm is formed by two or more people. The owners of the enterprise are called partners. A partnership deed must be signed by all the partners. The firm and its partners have no separate legal existence. The profits are shared by the partners. A firm has a limited life span and must be dissolved when any one of the partners dies, retires, claims bankruptcy etc.
- **Limited Liability Partnership (LLP):** In a Limited Liability Partnership or LLP, the partners of the firm enjoy perpetual existence as well as the advantage of limited liability. Each partner's liability is limited to their agreed contribution to the LLP. The partnership and its partners have a separate legal existence.

1.7.2 Business Opportunities Identification

The ability to identify business opportunities is an essential characteristic of an entrepreneur.

Common Questions Faced by Entrepreneurs

A critical question that all entrepreneurs face is how to go about finding the business opportunity that is right for them.

Some common questions that entrepreneurs constantly think about are

- Should the new enterprise introduce a new product or service based on an unmet need?
- Should the new enterprise select an existing product or service from one market and offer it in another where it may not be available?
- Should the enterprise be based on a tried and tested formula that has worked elsewhere?

It is therefore extremely important that entrepreneurs must learn how to identify new and existing business opportunities and evaluate their chances of success.

When is an Idea an Opportunity?

An idea is an opportunity when

- It creates or adds value to a customer
- It solves a significant problem, removes a pain point or meets a demand
- Has a robust market and profit margin
- Is a good fit with the founder and management team at the right time and place

Factors to Consider When Looking for Opportunities

Consider the following when looking for business opportunities

- Economic trends
- Changes in funding
- Changing relationships between vendors, partners and suppliers
- Market trends
- Changes in political support
- Shift in target audience

Ways to Identify New Business Opportunities

1. **Identify Market Inefficiencies:** When looking at a market, consider what inefficiencies are present in the market. Think about ways to correct these inefficiencies.
2. **Remove Key Hassles:** Rather than create a new product or service, you can innovatively improve a product, service or process.
3. **Create Something New:** Think about how you can create a new experience for customers, based on existing business models.
4. **Pick a Growing Sector/Industry:** Research and find out which sectors or industries are growing and think about what opportunities you can tap in the same.

5. **Think About Product Differentiation:** If you already have a product in mind, think about ways to set it apart from the existing ones.

Ways to Identify Business Opportunities Within Your Business

1. **SWOT Analysis:** An excellent way to identify opportunities inside your business is by creating a SWOT analysis. The acronym SWOT stands for strengths, weaknesses, opportunities, and threats.

SWOT analysis framework

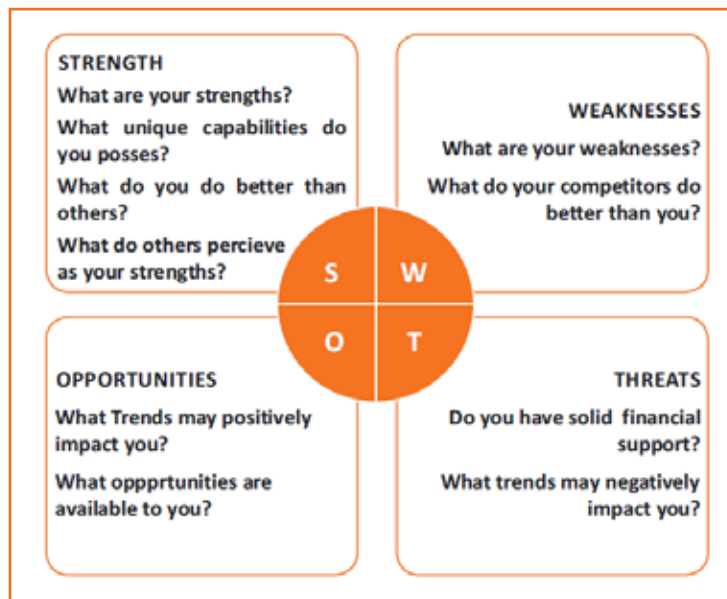


Fig 1.7.1: SWOT Analysis

Consider the following when looking for business opportunities

By looking at yourself and your competitors using the SWOT framework, you can uncover opportunities that you can exploit, as well as manage and eliminate threats that could derail your success.

2. **Establishing Your USP:** Establish your USP and position yourself as different from your competitors. Identify why customers should buy from you and promote that reason.

Opportunity Analysis

Once you have identified an opportunity, you need to analyze it. To analyze an opportunity, you must

- Focus on the idea
- Focus on the market of the idea
- Talk to industry leaders in the same space as the idea
- Talk to players in the same space as the idea

1.7.3 Market Study for Business Opportunities

Market research is the process of gathering, analyzing and interpreting market information on a product or service that is being sold in that market. It also includes information on

- Past, present and prospective customers
- Customer characteristics and spending habits
- The location and needs of the target market
- The overall industry
- Relevant competitors

Market research involves two types of data

- Primary information. This is research collected by yourself or by someone hired by you.
- Secondary information. This is research that already exists and is out there for you to find and use.

Primary research

Primary research can be of two types:

- **Exploratory:** This is open-ended and usually involves detailed, unstructured interviews.
- **Specific:** This is precise and involves structured, formal interviews. Conducting specific research is more expensive than conducting exploratory research.

Secondary research

Secondary research uses outside information. Some common secondary sources are

- **Public sources:** These are usually free and have a lot of good information. Examples are government departments, business departments of public libraries etc.
- **Commercial sources:** These offer valuable information but usually require a fee to be paid. Examples are research and trade associations, banks and other financial institutions etc.
- **Educational institutions:** These offer a wealth of information. Examples are colleges, universities, technical institutes etc.

The 4 Ps of Marketing

The 4 Ps of marketing are Product, Price, Promotion and Place. Let's look at each of these 4 Ps in detail.



Fig 1.7.2: 4Ps of marketing

Product: A product can be

- A tangible good
- An intangible service

Whatever your product is, it is critical that you have a clear understanding of what you are offering, and what its unique characteristics are, before you begin with the marketing process.

Some questions to ask yourself are

- What does the customer want from the product/service?
- What needs does it satisfy?
- Are there any more features that can be added?
- Does it have any expensive and unnecessary features?
- How will customers use it?
- What should it be called?
- How is it different from similar products?
- How much will it cost to produce?
- Can it be sold at a profit?

Price

Once all the elements of Product have been established, the Price factor needs to be considered. The Price of a Product will depend on several factors such as profit margins, supply, demand and the marketing strategy.

Some questions to ask yourself are

- What is the value of the product/service to customers?
- Do local products/services have established price points?
- Is the customer price sensitive?
- Should discounts be offered?
- How is your price compared to that of your competitors?

Promotion

Once you are certain about your Product and your Price, the next step is to look at ways to promote it. Some key elements of promotion are advertising, public relations, social media marketing, email marketing, search engine marketing, video marketing and more.

Some questions to ask yourself are

- Where should you promote your product or service?
- What is the best medium to use to reach your target audience?
- When would be the best time to promote your product?
- How are your competitors promoting their products?

Place

According to most marketers, the basis of marketing is about offering the right product, at the right price, at the right place, at the right time. For this reason, selecting the best possible location is critical for converting prospective clients into actual clients.

Some questions to ask yourself are

- Will your product or service be looked for in a physical store, online or both?
- What should you do to access the most appropriate distribution channels?
- Will you require a sales force?
- Where are your competitors offering their products or services?
- Should you follow in your competitors' footsteps?
- Should you do something different from your competitors?

1.7.4 Business Entity Concepts: Basic Business Terminology

If your aim is to start and run a business, it is crucial that you have a good understanding of basic business terms. Every entrepreneur should be well versed in the following terms

- **Accounting:** A systematic method of recording and reporting financial transactions.
- **Accounts payable:** Money owed by a company to its creditors.
- **Accounts Receivable:** The amount a company is owed by its clients.
- **Assets:** The value of everything a company owns and uses to conduct its business.
- **Balance Sheet:** A snapshot of a company's assets, liabilities and owner's equity at a given moment.
- **Bottom Line:** The total amount a business has earned or lost at the end of a month.
- **Business:** An organization that operates with the aim of making a profit.
- **Business to Business (B2B):** A business that sells goods or services to another business.
- **Business to Consumer (B2C):** A business that sells goods or services directly to the end user.
- **Capital:** The money a business has in its accounts, assets and investments. The two main types of capital are debt and equity.
- **Cash Flow:** The overall movement of funds through a business each month, including income and expenses.
- **Cash Flow Statement:** A statement showing the money that entered and exited a business during a specific period of time.
- **Contract:** A formal agreement to do work for pay.
- **Depreciation:** The degrading value of an asset over time.
- **Expense:** The costs that a business incurs through its operations.
- **Finance:** The management and allocation of money and other assets.

- **Financial Report:** A comprehensive account of a business' transactions and expenses.
- **Fixed Cost:** A one-time expense.
- **Income Statement (Profit and Loss Statement):** Shows the profitability of a business during a period of time.
- **Liabilities:** The value of what a business owes to someone else.
- **Marketing:** The process of promoting, selling and distributing a product or service.
- **Net Income/Profit:** Revenues minus expenses.
- **Net Worth:** The total value of a business.
- **Payback Period:** The amount of time it takes to recover the initial investment of a business.
- **Profit Margin:** The ratio of profit, divided by revenue, displayed as a percentage.
- **Return on Investment (ROI):** The amount of money a business gets as return from an investment.
- **Revenue:** The total amount of income before expenses are subtracted.
- **Sales Prospect:** A potential customer.
- **Supplier:** A provider of supplies to a business.
- **Target Market:** A specific group of customers at which a company's products and services are aimed.
- **Valuation:** An estimate of the overall worth of the business.
- **Variable Cost:** Expenses that change in proportion to the activity of a business.
- **Working Capital:** Calculated as current assets minus current liabilities.

1.7.5 Business Plan

Setting goals is important because it gives you long-term vision and short-term motivation. Goals can be short term, medium term and long term.

Short-Term Goals

- These are specific goals for the immediate future.

Example: Repairing a machine that has failed.

Medium-Term Goals

- These goals are built on your short term goals.
- They do not need to be as specific as your short term goals.

Example: Arranging for a service contract to ensure that your machines don't fail again.

Long-Term Goals

- These goals require time and planning.
- They usually take a year or more to achieve.

Example: Planning your expenses so you can buy new machinery

Why Create a Business Plan?

A business plan is a tool for understanding how your business is put together. It can be used to monitor progress, foster accountability and control the fate of the business. It usually offers a 3-5 year projection and outlines the plan that the company intends to follow to grow its revenues. A business plan is also a very important tool for getting the interest of key employees or future investors.

A business plan typically comprises of eight elements.

Executive Summary

The executive summary follows the title page. The summary should clearly state your desires as the business owner in a short and business like way. It is an overview of your business and your plans. Ideally this should not be more than 1-2 pages. Your Executive Summary should include

- **The Mission Statement:** Explain what your business is all about.

Example: McDonald's Mission Statement

McDonald's mission statement is **"To make delicious feel-good moments easy for everyone."**

- **Company Information:** Provide information like when your business was formed, the names and roles of the founders, the number of employees, your business location(s) etc.
- **Growth Highlights:** Mention examples of company growth. Use graphs and charts where possible.
- **Your Products/Services:** Describe the products or services provided.
- **Financial Information:** Provide details on current bank and investors.
- **Summarize future plans:** Describe where you see your business in the future.

Business Description

The second section of your business plan needs to provide a detailed review of the different elements of your business. This will help potential investors to correctly understand your business goal and the uniqueness of your offering.

Your Business Description should include

- A description of the nature of your business
- The market needs that you are aiming to satisfy
- The ways in which your products and services meet these needs
- The specific consumers and organizations that you intend to serve
- Your specific competitive advantages

Market Analysis

The market analysis section usually follows the business description. The aim of this section is to showcase your industry and market knowledge. This is also the section where you should lay down your research findings and conclusions.

Your Market Analysis should include

- Your industry description and outlook
- Information on your target market
- The needs and demographics of your target audience
- The size of your target market
- The amount of market share you want to capture
- Your pricing structure
- Your competitive analysis
- Any regulatory requirements

Organization & Management

This section should come immediately after the Market Analysis. Your Organization & Management section should include

- Your company's organizational structure
- Details of your company's ownership
- Details of your management team
- Qualifications of your board of directors
- Detailed descriptions of each division/department and its function
- The salary and benefits package that you offer your people
- The incentives that you offer

Service or Product Line

The next section is the service or product line section. This is where you describe your service or product, and stress on their benefits to potential and current customers. Explain in detail why your product of choice will fulfill the needs of your target audience.

Your Service or Product Line section should include

- A description of your product/service
- A description of your product or service's life cycle
- A list of any copyright or patent filings
- A description of any R&D activities that you are involved in or planning

Marketing & Sales

Once the Service or Product Line section of your plan has been completed, you should start on the description of the marketing and sales management strategy for your business.

Your Marketing section should include the following strategies

- **Market penetration strategy:** This strategy focuses on selling your existing products or services in existing markets, in order to increase your market share.
- **Growth strategy:** This strategy focuses on increasing the amount of market share, even if it reduces earnings in the short-term.

- **Channels of distribution strategy:** These can be wholesalers, retailers, distributors and even the internet.
- **Communication strategy:** These can be written strategies (e-mail, text, chat), oral strategies (phone calls, video chats, face-to-face conversations), non-verbal strategies (body language, facial expressions, tone of voice) and visual strategies (signs, webpages, illustrations).

Your sales section should include the following information

- **A salesforce strategy:** This strategy focuses on increasing the revenue of the enterprise.
- **A breakdown of your sales activities:** This means detailing out how you intend to sell your products or services - will you sell it offline or online, how many units do you intend to sell, what price do you plan to sell each unit at, etc.

Funding Request

This section is specifically for those who require funding for their venture. The Funding Request section should include the following information

- How much funding you currently require.
- How much funding you will require over the next five years. This will depend on your long-term goals.
- The type of funding you want and how you plan to use it. Do you want funding that can be used only for a specific purpose, or funding that can be used for any kind of requirement?
- Strategic plans for the future. This will involve detailing out your long-term plans – what these plans are and how much money you will require to put these plans in motions.
- Historical and prospective financial information. This can be done by creating and maintaining all your financial records, right from the moment your enterprise started, to the present day. Documents required for this are your balance sheet which contains details of your company’s assets and liabilities, your income statement which lists your company’s revenues, expenses and net income for the year, your tax returns (usually for the last three years) and your cash flow budget which lists the cash that came in, the cash that went out and states whether you had a cash deficit (negative balance) or surplus(positive balance) at the end of each month.

1.7.6 Enterprise Management

To manage your enterprise effectively you need to look at many different aspects, right from managing the day-to-day activities to figuring out how to handle a large scale event. Let's take a look at some simple steps to manage your company effectively.

Step 1: Use your leadership skills and ask for advice when required.

Step 2: Divide your work amongst others – realize that you cannot handle everything yourself.

Even the most skilled manager in the world will not be able to manage every single task that an enterprise will demand of him. A smart manager needs to realize that the key to managing his enterprise lies in his dividing all his work between those around him. This is known as delegation. However, delegating is not enough. A manager must delegate effectively if he wants to see results. This is important because delegating, when done incorrectly, can result in you creating even more work for yourself.

Step 3: Hire the right people for the job.

Hiring the right people goes a long way towards effectively managing your enterprise. To hire the best people suited for the job, you need to be very careful with your interview process. You should ask potential candidates the right questions and evaluate their answers carefully. Carrying out background checks is always a good practice. Running a credit check is also a good idea, especially if the people you are planning to hire will be handling your money. Create a detailed job description for each role that you want filled and ensure that all candidates have a clear and correct understanding of the job description. You should also have an employee manual in place, where you put down every expectation that you have from your employees. All these actions will help ensure that the right people are approached for running your enterprise.

Step 4: Motivate your employees and train them well.

Your enterprise can only be managed effectively if your employees are motivated to work hard for your enterprise. Part of being motivated involves your employees believing in the vision and mission of your enterprise and genuinely wanting to make efforts towards pursuing the same. You can motivate your employees with recognition, bonuses and rewards for achievements. You can also motivate them by telling them about how their efforts have led to the company's success. This will help them feel pride and give them a sense of responsibility that will increase their motivation. Besides motivating your people, your employees should be constantly trained in new practices and technologies. Remember, training is not a one-time effort. It is a consistent effort that needs to be carried out regularly.

Step 5: Train your people to handle your customers well.

Your employees need to be well-versed in the art of customer management. This means they should be able to understand what their customers want, and also know how to satisfy their needs. For them to truly understand this, they need to see how you deal effectively with customers. This is called leading by example. Show them how you sincerely listen to your clients and the efforts that you put into understand their requirements. Let them listen to the type of questions that you ask your clients so they understand which questions are appropriate.

Step 6: Market your enterprise effectively.

Use all your skills and the skills of your employees to market your enterprise in an effective manner. You can also hire a marketing agency if you feel you need help in this area. Now that you know what is required to run your enterprise effectively, put these steps into play, and see how much easier managing your enterprise becomes!

1.7.7 Online Banking

Internet or online banking allows account holders to access their account from a laptop at any location. In this way, instructions can be issued. To access an account, account holders simply need to use their unique customer ID number and password.

Internet banking can be used to

- Find out an account balance
- Transfer amounts from one account to another
- Arrange for the issuance of cheques
- Instruct payments to be made
- Request for a cheque book
- Request for a statement of accounts
- Make a fixed deposit

Electronic Funds Transfers

Electronic funds transfer is a convenient way of transferring money from the comfort of one's own home, using integrated banking tools like internet and mobile banking.

Transferring funds via an electronic gateway is extremely convenient. With the help of online banking, you can choose to

- Transfer funds into your own accounts of the same bank.
- Transfer funds into different accounts of the same bank.
- Transfer funds into accounts in different bank, using NEFT.
- Transfer funds into other bank accounts using RTGS.
- Transfer funds into various accounts using IMPS.

NEFT

NEFT stands for National Electronic Funds Transfer. This money transfer system allows you to electronically transfer funds from your respective bank accounts to any other account, either in the same bank or belonging to any other bank. NEFT can be used by individuals, firms and corporate organizations to transfer funds between accounts.

In order to transfer funds via NEFT, two things are required

- A transferring bank

- A destination bank

Before you can transfer funds through NEFT, you will need to register the beneficiary who will be receiving the funds. In order to complete this registration, you will require the following information

- Recipient's name
- Recipient's account number
- Recipient's bank's name
- Recipient's bank's IFSC code

RTGS

RTGS stands for Real Time Gross Settlement. This is a real time funds transfer system which enables you to transfer funds from one bank to another, in real time or on a gross basis. The transferred amount is immediately deducted from the account of one bank, and instantly credited to the other bank's account. The RTGS payment gateway is maintained by the Reserve Bank of India. The transactions between banks are made electronically. RTGS can be used by individuals, companies and firms to transfer large sums of money. Before remitting funds through RTGS, you will need to add the beneficiary and his bank account details via your online banking account. In order to complete this registration, you will require the following information

- Name of the beneficiary
- Beneficiary's bank address
- Beneficiary's account number
- Beneficiary's bank's IFSC code

IMPS

IMPS stands for Immediate Payment Service. This is a real-time, inter-bank, electronic funds transfer system used to transfer money instantly within banks across India. IMPS enables users to make instant electronic transfer payments using mobile phones through both, Mobile Banking and SMS. It can also be used through ATMs and online banking. IMPS is available 24 hours a day and 7 days a week. The system features a secure transfer gateway and immediately confirms orders that have been fulfilled.

- Register for IMPS with your bank
- Receive a Mobile Money Identifier (MMID) from the bank
- Receive a MPIN from the bank

To transfer money through IMPS, the you need to

Once you have both these, you can login or make a request through SMS to transfer a particular amount to a beneficiary.

For the beneficiary to receive the transferred money, he must

1. Link his mobile number with his respective account
2. Receive the MMID from the bank

In order to initiate a money transfer through IMPS, you will need to enter the following information:

1. The beneficiary's mobile number
2. The transfer amount
3. The beneficiary's MMID
4. Your MPIN

As soon as money has been deducted from your account and credited into the beneficiary's account, you will be sent a confirmation SMS with a transaction reference number, for future reference.

Activity 1

Answer each of the following questions

Circle your answer for each question

Refer to the result of table given below and evaluate the result of your answers

Sl No.	Quality	Mark where you stand (Circle your answer)					Write your result here
		Strongly Agree	Agree	Some-what Agree	Some-what Disagree	Strongly Disagree	
1	I have a passion to do new things	5	4	3	2	1	
2	I believe in my capabilities	5	4	3	2	1	
3	I believe in taking efforts without worrying whether I will succeed or not	5	4	3	2	1	
4	I always continue to work regardless of obstacles and difficulties	5	4	3	2	1	
5	I believe that instead of getting disappointed by failures, I should learn from them	5	4	3	2	1	
6	I always do my work keeping in mind its long term achievements	5	4	3	2	1	

SI No.	Quality	Mark where you stand (Circle your answer)					Write your result here
		Strongly Agree	Agree	Some-what Agree	Some-what Disagree	Strongly Disagree	
7	Whenever I see an opportunity to do something, I grab it before anyone else can	5	4	3	2	1	
8	I am always ready to adjust to new situations	5	4	3	2	1	
9	I am comfortable In taking financial risks	5	4	3	2	1	
10	I like to delegate work to others whom I believe are competent	5	4	3	2	1	
11	I would prefer to be my own boss rather than working under someone else	5	4	3	2	1	
12	I am committed to working more than 40 hours a week	5	4	3	2	1	
13	I believe In the fact that we are in charge of our own destiny	5	4	3	2	1	
14	I like to set goals and timeliness for achieving it	5	4	3	2	1	
15	I am good in organising and prioritising my work	5	4	3	2	1	

Result:

- Evaluate your answers after you complete the table
- **Check the result for each question if your answer is:**

Score	Evaluation	Result
1-3	You need to work hard to develop this quality	Work hard
4	You possess this quality but need to enhance it for better success	Keep improving
5	You possess this quality and this is your strength use it to make timely and effective decision	Use this strength

- Write your results for each question answered in last the last counm of above table.

Activity 2 

Write your strengths, weaknesses, opportunities and threats in the 4 sections here:

Strength	Weaknesses
Opportunities	Threat

1. Was this activity helpful in doing a self-assessment?

2. What are some of the most interesting things you discovered about yourself during the activity

Notes



2. Selection of Product and Business Planning



Unit 2.1 – Business Planning

Unit 2.2 – Selection of Product

Unit 2.3 – Costing, Packaging and Branding



Key Learning Outcomes



At the end of this module, participants will be able to:

1. Explain the purpose and importance of business plan
2. Create a business plan
3. Identify the various types of risks and challenges in setting up a business
4. State the process of setting up a business
5. Describe the selection criteria of product
6. State the different methods to conduct market survey
7. Discuss the procedure of feasibility study of product
8. Discuss the procedure of testing and trial production of product
9. Apply the concept of cost management to make business decisions
10. Select a suitable brand name for the selected product

Unit 2.1: Business Planning

Unit Objectives

At the end of this unit, participants will be able to:

1. Explain the purpose and importance of business plan
2. Create a business plan
3. Identify the various types of risks and challenges in setting up a business
4. State the process of setting up a business

2.1.1 Business Plan

A business plan is a document that contains the objectives, scope and direction for your business. It aids in determining the feasibility of your business ideas and raise capital. It is a road map for your business operations.

The purpose of writing a business plan is to detail

- What you seek to achieve
- How you intend to take to achieve it

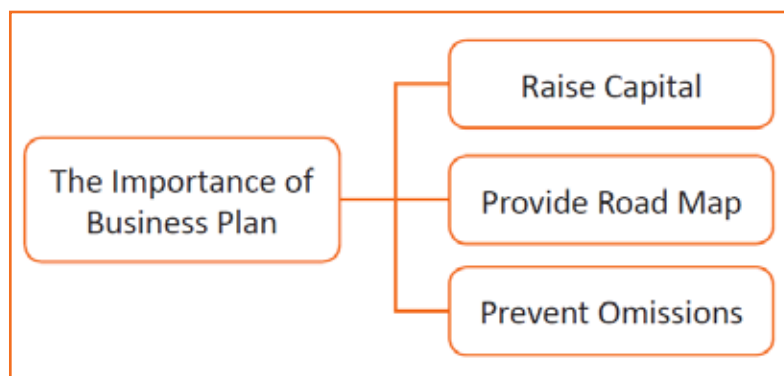


Fig 2.1.1: Purpose of business plan

There is no rigid formula existing for writing business plans. Every new business may be unique to the business situation or idea. Even so, there are some general guidelines to be followed while preparing a business plan.

A business plan is a detailed project report that becomes a base document for planning and implementing. It serves as collateral with future cash flow and profitability, to be acceptable to raise the necessary funds (bankable project).

After the preparation of a business plan, it is advisable to get expert advice of the concerned areas of operations and modify it accordingly.

2.1.2 Components of a Business Plan

The major sections of a business plan include the detail of the business idea, the formation of type of company/ business, products or services, manufacturing and operations plan, marketing plan, the team, critical risks and assumptions, benefits to the community, exit strategy, financial plan (sources and uses of funds), possible contingencies that you should anticipate etc.

2.1.3 Risks in a Small Business

The decision to start your own business should be made with a full understanding of the risks involved. You should be able to anticipate problems and reduce the possibility of loss, and increase your chances of success.

The prospect of failure should serve as a warning to you. You need a vision, resources, and a plan to take advantage of the opportunity that exists.

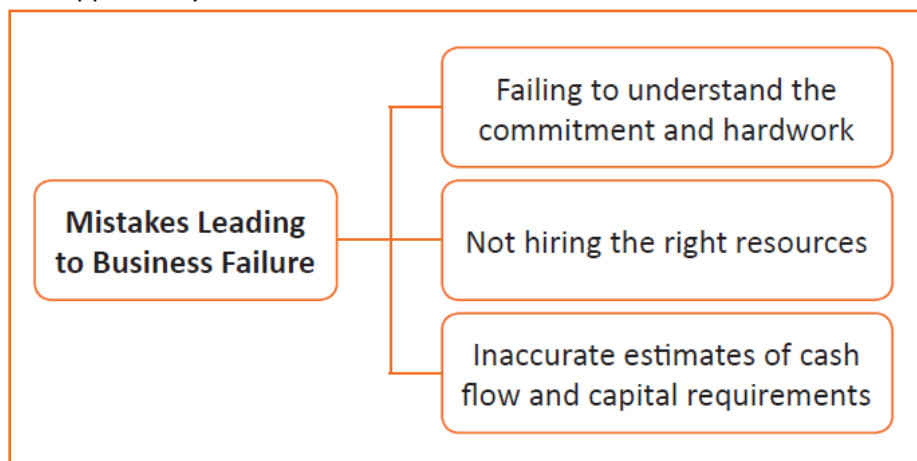


Fig 2.1.2: Mistakes in business

Business risk can be classified into risk of damage to assets and risk of personal lives. Damage to assets like plant and machines can be avoided by way insuring the assets, which also includes cash (loss due to theft etc.). Personal insurance for own life is covered by life insurance periodical premium payments.

Form of Business

The entrepreneurs may decide to set up the business on its own or may decide to start jointly with others. The various factors that one needs to consider while deciding on form of organisation are funds required, risk associated with the projects, length of the project, etc. In case of partnership, there is an added requirement on deciding the terms of the agreement, capital ratio, profit sharing, legal documentation, etc.

Sources of funds

The entrepreneur should calculate the total funds required under the following heads

- **Fixed Capital Requirement:** the funds required to acquire fixed assets for the business. These can be owner's capital investment or long-term loans.

- **Working Capital Requirement:** the minimum funds required to effectively cover the costs and expenses necessary to operate the business.

Cash Flow Statement

A cash flow statement shows how money enters and exits your business. It is a financial document that shows the amount of money a business has on hand at the beginning of a time period, receipts coming into the business, and money going out of the business during the same period.

Evaluation of Profitability

Profitability should not be measured in terms of absolute profit amount. Rather, profitability means the returns as a percentage of capital invested in the business.

2.1.4 Steps for Setting a Business

Now, we come to the actual process of setting up the business. Given below is a simple ten-step process to follow



Fig 2.1.3: Steps of setting a business

Activity

Fill the template of business plan as first draft for your selected venture:

Sl No.	Key Elements of Business Plan	Write the Description
1	Cover Page (The title or a brief description about your business idea)	
2	Executive Summary (A report which will draw conclusions and make recommendations. If your report presents the need for change, recommend the action/s that supports the change. State the benefits of your product or service, or the solutions you provide)	
3	Business Goals and Objectives (The vision, mission, planned milestones and achievements)	
4	Project Description (A complete and detailed description of the project/ your venture - about the company and its products. A detailed time line how you are planning to achieve this. This will also include cost and other resources)	
5	Market Research and Analysis (Market size, demand for the product, competitors)	
6	Marketing Plan (Location and profile of target customers, marketing mix-product, place, price, promotion)	
7	Operating Plan (Resources - Land, factory, machine - buy or lease; utility supplies-electricity, water, fuel, raw material and labour requirement etc. Approvals and clearances required)	
8	Management Team (Organisation structure, key roles, no. of people required in key roles etc.)	
9	Financial Plan (Project cost, funding plan)	

Table

Scan the QR code or click on the link to watch related videos



www.youtube.com/watch?v=fzBX-BI-IWY
How to start a food business

Notes



Unit 2.2: Selection of Product

Unit Objectives

At the end of this unit, participants will be able to:

1. Describe the selection criteria of product
2. State the different methods to conduct market survey
3. Discuss the procedure of feasibility study of product
4. Discuss the procedure of testing and trial production of product

2.2.1 Selection of Product

To succeed as an entrepreneur it is extremely important to choose the right product to manufacture according to budget, location, availability of raw materials, passion, market demand, etc. Focusing on a specific niche or type of food production makes your product stand out and grab the attention of consumers. It is important to know the market trends and manufacture the products accordingly.

Factors responsible for selection of product

1. **Consumer demand:** An important criteria is, to figure out if your selected product has a major demand in the market. While some entrepreneurs are known for creating a demand for their product, for some of us who are aspiring to be one, it's wiser to play safe with a product that already has a demand. However, the endpoint is to measure or analyse the intensity of demand for the selected product.
2. **Investment required:** The size of investment is another important factor while choosing a product. Adequate funding is required to carry out pre-launch activities such as development, production, promotion, marketing and distribution amongst others.
3. **Availability and access to raw materials:** Differences in products require different raw materials. Factors such as the source of the materials, the quality to be achieved as well as the quantity of the raw materials are key management decisions.

Will the raw materials be available in sufficient quantities, over a continual basis?

Where are the locations of raw materials needed? Are they accessible?

Will it be important to situate the business close to these sources of raw materials?

If local sources are incapable of meeting demand, are there viable alternatives abroad?

The entrepreneur must embark on a thorough analysis of these limiting factors before selecting a particular product.

4. **Technical considerations:** The production route for the product bears a lot of weight when it comes to product selection. The technical dynamics of the chosen product such as available technology, power requirement, use of automated processes or human labor etc. are also need

to consider.

5. **Profitability of the Product:** As a business you should choose products that have the potential to be financially rewarding. You must identify the most economic source of the product and ensure that your target audience is willing to pay a good price for it. A good idea would also be to check how the product has fared over the years.
6. **Competition:** Unless your product and/or offering is unique, there is a high chance that you will face stiff competition from businesses who are already engaged in exporting similar product exports from within your geography. In such a case, you must present your product as unique and different from your competitors.
7. **Government policies and objectives:** These product selection factors are often beyond the control of the entrepreneur. The thrust of government policies on economics and commerce, over time, is usually in the national interest, which may or may not be at odds with the objectives of the business. For instance, the persistence of government on the use of 100% locally sourced raw materials will greatly influence the decisions of a business with regard to what business product to introduce to the market.



Fig 2.2.1: Factors for selection of product

Some of the major market trends to consider for product selection

- Low calorie and high protein foods
- Chemical-free and organic food products
- Immunity boosting foods and beverages
- Plant-based proteins and meat replacement food
- Innovative flavor combinations

Top food processing business ideas:

1. **Ready to eat foods:** Currently demand for ready-to-eat foods is increasing exponentially due to an increase in the number of working women and changes in the lifestyle of consumers. As ready-to-eat foods can be consumed as breakfast, lunch, or dinner, so customers are seeing them as alternates for everyday food making. Currently ready-to-eat food business is one of the fastest-growing business in the world.

Segments in ready-to-eat foods:

- i. Instant breakfast like cereals
- ii. Bakery products and confectioneries
- iii. Instant soups and snacks
- iv. Ready meals
- v. Ready meat products



Fig 2.2.2: Ready to eat food

2. **Millet based food products:** Millets contain nutrients such as vitamins, proteins, minerals, carbohydrates, etc. Now, urban population is shifting towards millet-based foods.

Here are the best millet-based food business ideas -

- i. Instant mixes such as dosa, idli and upma mix
- ii. Millet cookies
- iii. Millet bread/bun
- iv. Millet based namkeen and snacks



Fig 2.2.3: Dosa mix

3. **Beverages:** The non-alcoholic beverages market in India is increasing rapidly. Rapid growth and rising disposable income fuelling the growth of the beverage industry in India. Currently immunity-boosting beverages have emerged as one of the best business in the beverages sector.

Some of the examples of beverage industry are Fruit Juices, Carbonated Drinks, Packaged Drinking Water, Dairy-Based Drinks etc.



Fig 2.2.4: Beverages

4. **Plant-based foods :**As 35% of Indians are vegetarians and plant-based food industry is growing jumps and bounds in India and reached a volume of about 11,300 tons in 2020 and is expected to reach 16,000 tons by 2023. Soya, almonds, wheat, pea, and rice are used as the main sources of proteins in the industry.

Some of the examples of plant-based food industry are Dairy Alternatives, Meat Alternatives, Egg Substitutes and Condiments, Baked Goods etc.



Fig 2.2.5: Plant based foods

5. **Dairy processing:** As India has the largest livestock population in the world, there are lot opportunities in the dairy processing industry for entrepreneurs to produce a wide array of products. There is a huge demand for Indian dairy products in other countries such as Bhutan, United Arab Emirates, Canada etc.

Some of the value-added products of the dairy processing industry are Paneer, Ice cream, Cheese, Flavored milk, Khova, Lassi, Skimmed milk, Ghee etc.

2.2.2 Feasibility Study of Product

You probably also have a lot of questions like

- Who would buy my product?
- What audience(s) should I target?
- What products are competitors?
- What's the market share for competitors?
- How much should I sell my product for?
- How should I promote my product?

A new product feasibility study answers these questions and other key performance indicators. A feasibility study is an analysis of how successfully your product can sustain in the market, by accounting factors that affect it such as economic, technological, legal and scheduling factors.

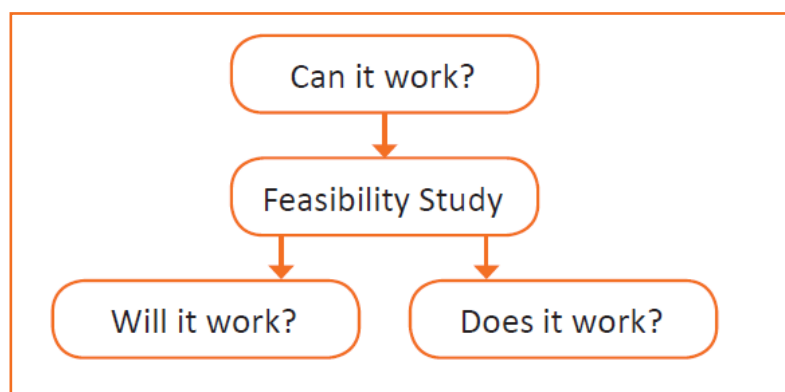


Fig 2.2.6: Feasibility study

Importance of conducting feasibility study before starting a business

- Feasibility study will help you to determine the profitability of the business venture.
- A feasibility study report will help prove to the entrepreneur, venture capitalists, lenders and investors the existence of the market
- Feasibility study will help you identify the flaws, business challenges, strengths, weaknesses, opportunities, threats and unforeseen circumstances that might affect the success and sustainability of the business.
- Before starting a business, feasibility study will enable you estimate the financial, human and

technological resources that will be needed to ensure the successful launching of the business.

- Feasibility study will help you to determine the amount of capital required to start the business.

A new product feasibility study is a market research methodology that aims to provide predictive analytics to guide the next steps for marketing, sales, and product development.

The objectives of this type of market research often include obtaining insight on

- Product placement
- The target market
- Marketing and advertising
- The competition
- Pricing strategies

There may also be several secondary objectives included in the feasibility study report, depending on your needs and specifications.

A new product feasibility studies generally incorporate five different components

1. Demographic analysis
2. Competitive assessments
3. Pricing analysis
4. Online surveys
5. Stakeholder interviews

Steps to Conduct a Feasibility Study

Step 1: Conduct a Preliminary Analysis

Step 2: Prepare a Projected Income Statement

Step 3: Conduct a Market Survey

Step 4: Plan Business Organisation and Operations

Step 5: Prepare an Opening Day Balance Sheet

Step 6: Review and Analyse All Data

Step 7: Make “Go/No Go” Decision

Example of a survey questionnaire on the quality of competitors’ chilli sauce

Questions		1	2	3	4	5
		Very Good	Good	Average	Bad	Very Bad
1	Which make(s) of sauce do you buy most often?	Write names of sauce(s)				

Questions	1	2	3	4	5
	Very Good	Good	Average	Bad	Very Bad
2	What do you think about the colour of the sauce you buy? Tick in the appropriate place				
3	What do you think about the seeds being present in the sauce? Tick in the appropriate place				
4	Do you like the thickness of the sauce? Tick in the appropriate place				
5	What do you think about the flavour of the sauce? Tick in the appropriate place				
6	Do you like the bottle? Tick in the appropriate place				
7	What do you think about the label? Tick in the appropriate place				
8	What do you think about the price of the sauce? Tick in the appropriate place				
9	Is there anything else that you think is good about the sauce that you buy at present? Write answers				
10	Is there anything else about the sauce that you buy that you would like to see improved? Write answers				

Table 2.2.1: Questionnaire for feasibility study

Data collected about consumers' opinions of the quality of a product

Questions	Summary of 50 replies					
	1	2	3	4	5	Total
	Very Good	Good	Average	Bad	Very Bad	
1	12	32	5	1	0	50

Questions		Summary of 50 replies					
		1	2	3	4	5	Total
		Very Good	Good	Average	Bad	Very Bad	
2	What do you think about the seeds being present in the sauce?	5	6	16	14	9	50
3	Do you like the thickness of the sauce?	10	20	12	7	1	50
4	What do you think about the flavour of the sauce?	42	8	0	0	0	50
5	Do you like the bottle?	40	10	0	0	0	50
6	What do you think about the label?	10	11	20	9	0	50
7	What do you think about the price of the sauce?	5	7	12	25	1	50

Table 2.2.2: Consumer opinion data

When it is completed, the entrepreneur should be able to answer the following questions:

- Who is producing similar products?
- Where are the competitors located?
- What is the quality and price of their products?
- What can I do to make a new product that is better than those of competitors?
- Why would customers or consumers want to change to a new product?
- What offers or incentives do competitors give to retailers?
- What are competitors likely to do if a new product is introduced?

2.2.3 Market Research and Analysis

Before launching a food manufacturing firm, you must first learn about the market and select a product that you can create without difficulty. You should consider the product's feasibility or the availability in the market while making your choice. Market research refers to the collection and analysis of data related to a particular industry. It helps you build the right strategies to compound the growth of your food processing business. You may use market analysis and research to figure out, the size of the market, who your competitors are, and current trends.

Benefits of market research report

- Provide valuable data to make planned decisions.
- Provide deep insights into the industry quickly.
- Focus on customer demands and market trends.
- Help to determine competitor's strengths and weaknesses.
- Minimize investment risks.
- Help to identify potential threats and opportunities.

Various methods of market research

- **Surveys:** Surveys are carried out with the help of concise and straightforward questionnaires. The questionnaires are used to analyse a sample group that represents the target market. In this type of market research, the larger the sample group, the more reliable the results.
- **Focus Groups:** In this type of market research, a moderator leads a discussion with a group of people. A number of scripted questions or topics are used in the discussion. Typically, focus group sessions are recorded via video, and take place in an observation room with one-way mirrors. The discussion usually takes an hour or two. For best results, a minimum of three groups should be used.
- **Personal Interviews:** The personal interview method of market research involves a series of questions that are open-ended and unstructured. Interviews are normally recorded and are carried out for about an hour.
- **Observation:** Observation entails observing consumers in action. This can be done by video-taping consumers in stores, in their homes, or in their workplace. By observing them in these scenarios, you can get a good understanding of how they buy a product, as well as how they use that product. This results in a rather accurate understanding of different consumers habits when it comes to product use, and patterns with regards to shopping.



Fig 2.2.7: Methods of market research

- **Field Trials:** Field trials involve placing new products in certain stores. The aim of this method of market research is to test customer responses in real life conditions. By analysing customer responses, we can get a better picture as to whether changes should be made to the product, its price or even its packaging.

2.2.4 Product Development and Testing

Constant innovations are happening in food processing industries to develop innovative products as per market trends and consumer preferences. Food processing industries must ensure that their products are having good shelf life and follow the guidelines set by FSSAI (Food Safety and Standards Authority of India).



Fig 2.2.8: Steps of product development

Here are the steps involved in food product development

- Idea generation and screening
- Market Research
- Product specifications
- Process development
- Prototype development
- Consumer testing
- Commercialization

Product trial production

A prototype is an example of a product to be manufactured to test the quality and ensure specifications are met. After developing the prototype, it has to be tested by multiple consumers and opinions should

be collected. A certified lab testing report has to be included as well.

Reasons to conduct prototype testing

- To check all the specifications have been met.
- To compare the product against competitors.
- To determine the shelf life of the product.
- To collect opinions on taste, flavor, texture, etc.

Production trials are an opportunity to risk assess and scrutinise each ingredient and how they are processed at each step involved in creating the new product. Ingredients used in small sample level trials may now be needed in a very different format. This might be to ensure they can be handled easily in the manufacturing site, or are readily available in quantities that will be needed or to secure costs which allow the end product to be profitable. These new formats may impact how they are handled. For example, might you need to automate or provide ways to assist how raw materials are transported during production ? This might be important to ensure safe manual handling and to prevent muscle strain. You may also identify a need for intermediate preparation steps to convert the ingredient to the size and format that you need to get the best results for your product and improve production efficiencies. Also consider if the shelf life during which each ingredient remains food safe are compatible with one another – for example you could not add a fresh herb garnish with only 2 days shelf life to a product seeking to have 8 days life.

Activity 

As per the sector of food processing industry that you have selected, write down the products you have chosen

Score selected:

Product identified:

Prepare a SWOT analysis of the selected sector and product

Strength	Weaknesses
Opportunities	Threat

Where do you think you will face challenges – (refer to the SWOT) in making the product selected?

Discuss the treats and opportunities in the area of your venture?

Discuss how can you overcome the challenges in the area of your venture?

Unit 2.3: Costing, Branding and Packaging

Unit Objectives

At the end of this unit, participants will be able to:

1. Apply the concept of cost management to make business decisions
2. Select a suitable brand name for the selected product
3. State the different methods of packaging processed foods
4. State the different materials used in packing processed foods

2.3.1 Costing

What is Cost ?

In simple terms, cost is the amount spent in getting something.

Let us consider an example of a maker of sandwich.

Cost of materials and services to make a sandwich:

- Bread -INR 10
- Vegetables– INR 10
- Ingredients and other– INR 10

then the cost of the sandwich is INR 30.

The sandwich could be sold for INR40. The cost is still remains INR 30.

INR 30 is called the 'Selling Price' or 'Price'. It has nothing to do with cost.

Selling price can also be known as market, list, or standard price. And the following factors help organizations determine the selling price of their products

- The price a buyer is willing to pay.
- The price a seller is willing to accept.
- The price that's competitive in the market.

Depending on the type of business you own and the offerings you sell, you might prioritize one of these factors over the others. The average selling price can act as a summary of these factors to help you determine the price you should assign your product.

Selling price is decided by the maker of the sandwich. Cost is determined by the amount of money it takes to make the sandwich.

Direct Costs and Indirect Costs

- Direct Costs can be directly traced to a product or a department, and hence can be charged directly to the product. For example, direct material cost, direct labour costs, etc.

- Indirect Costs are common cost across departments. They cannot be allocated to a product or department but is apportioned on a suitable basis among the departments.

Variable Cost and Fixed Cost

- Variable Cost is the cost that tends to vary proportionately with the level of activity within the relevant range and within a given period. For example, ingredients required for making a sandwich varies directly with the number of sandwiches that are prepared and hence the cost of ingredients is variable. The cost is constant per unit.
- Fixed Costs remain constant in total regardless of changes in volume up to a certain level of output. They are not affected by changes in the volume of production. For example, rent of the office, etc.

Sunk Cost and Relevant Cost

- Sunk Costs are those for which the expenditure has taken place in the past. This cost is not affected by current and future decisions.
- Relevant Costs are the costs that are appropriate and that affect the decision in hand.
- In any decision-making situation, such as make or buy, buy or lease, etc. only the relevant cost are taken into consideration while evaluating the various options.

Break Even Analysis

Break-even analysis is a technique where total variable and fixed costs are compared with sales revenue in order to determine the level of sales volume, sales value or production at which the business makes neither a profit nor a loss (the “**break-even point**”). It also helps us determine the sales quantity, which will enable us to make a certain amount of profit.

Calculate your true food costs:

1. List every ingredient for each dish. It can be easier to use an excel spreadsheet, table, or food ingredient software to come up with a comprehensive list. Don't forget spices, oils, and other items used to create a dish.
2. Calculate the total cost based on the ingredients used for each dish.
3. Calculate the cost per meal based on the ingredients used for each item presented.
4. Calculate which dishes account for the total percentage of your food costs (Are there any ingredient substitutions you can make to maintain the dish's flavor while increasing your profit margins?)
5. Determine your food cost target (What you're willing to pay for each dish to make it consistently.)

2.3.2 Branding

When developing a brand name for your product, you can think about the following:

- Use the name of the founder or inventor (Example - Hewlette-Packard)
- Describe what you do (Example - Southwest Airlines)
- Describe an experience or image (Example - Sprint)
- Use an everyday word, out of context (Example - Apple)
- Create a new word (Example - Google)

Think about the following questions:

- What does your name need to accomplish?
- Will the name work with existing products or service names?
- Do you want the name to be descriptive, invented, the founder's name, etc?
- Do you have an objective criteria to evaluate the names you generate?

Ensure that the name you like:

- Sounds good when a sales representative says it over the phone
- Is not likely to be constantly mispronounced or misspelled
- Is not confusing
- Has a URL that works with it

2.3.3 Selection of Packaging

Packaging means enclosing or protecting products for distribution, storage, sale, and use. Packaging includes designing and producing the container of the product.

Why is food packaging important?

- Improper packaging can make the food less appetizing. Apart from making the food attractive, the food packaging serves a lot other purposes as well—protecting food from contamination, ensuring its temperature, and saving it from impact during shipping.
- Packaging creates an association between the food brand and the audience. It leaves a long-lasting image in their mind. If not now, it motivates the consumers to make a purchase some other time.
- Upon delivery, if customers find the food spilt all over the packaging, he feels disgusted. So, the shipping packaging is also equally important. It keeps the product safe and in place until delivery.

Here are few factors need to consider while planning package design:

- **Budget:** First determine the scope of budget. This will determine what kinds of materials you can use, and how much you can spend making the design as tempting as possible.

For example: Materials like glass and natural fibers look terrific and are visually appealing to consumers,

but are not cheap, either to manufacture or to ship. Glass is heavy and breakable, leading to shipping and storage concerns, and may lead to increased consumer prices.

There are many cheap options available like cardboard, which is an inexpensive material and also offers reasonable crush protection and interesting design opportunities.

Plastic is not the most environmentally-friendly option, though is often recyclable, can be made from recycled materials, or both.

- **Transportation:** An amazing design can tell consumers it was made for them but if it can't travel to facility shelves without any damage, then the design of package is worthless.

If your product is bulky, delicate, or any kind of unusual shape, it's important to consider materials that are designed for strength. Products with a long shelf life that need to stand out even after a long time on the shelf need special considerations, too.



Fig 2.3.1: Different type of packagings

It's always more cost-effective in the long run to pay for adequate protective package design in the first place than to replace damaged goods later on.

- **Materials and sustainability:** Food can be packaged in a variety of materials, but when choosing packaging, number of considerations has to make
 - i. The packaging has to allow for products to be delivered to the grocery while remaining edible.
 - ii. Form and beauty are important, but make sure that product's packaging is strong enough to transport the food without it spoiling or sustaining some other damage.
 - iii. Always make sure that the package can be easily stored for transport and placed on the shelves among other items. Food packaging that is bulky or takes up too much space might be a hassle for the grocer or make it difficult to shelve.
 - iv. Also consider the amount of time the product might sit on the shelf before consumers purchase it.
 - v. You will have to place nutritional and content information somewhere on the packaging, which can interfere with the design if the packaging is too small.

However, you have to stick to a few common materials. Much of the food packaging materials are made out of plastic, aluminum, and cardboard.

- **Size:** If that product comes in four different sizes, you can reduce costs by designing two different sized packages instead of four individual sizes by being economical with the dimensions and design.

Being creative in this way and incorporating cost saving measures can ensure the integrity of the product you ship.



Fig 2.3.2: Package size as per product

- **Design and branding:** While it's important to consider budget, transportation, materials, and package design and to incorporate each of these elements into your overall package design, it's key to keep your audience at the forefront of each of these decisions.

Keeping the target audience at the forefront of your design along the way will help you meet overall success with package design.

The type of material you choose to use in your package design is a part of your brand, so any disconnect between your materials or design and your brand's message will confuse consumers and make them lose trust.

To appeal to your customers, you have to research and understand them enough before you make these key marketing and branding decisions.

Notes



A large rectangular area enclosed in an orange border, containing 24 horizontal lines for writing.

3. Prepare for Start-up of Food Processing Unit



Unit 3.1 – Site Selection for Food Processing Unit

Unit 3.2 – Banking and Managing Finance

Unit 3.3 – Entrepreneur’s Memorandum



Key Learning Outcomes



At the end of this module, participants will be able to:

1. State the factors for selecting the site for food processing unit
2. State the design and construction requirements for food processing unit
3. State the various ways for arranging loans to start a business
4. State the requirements for arranging finance for starting a business
5. State the procedure for applying and arranging finance
6. State the different registrations and licenses requirements for food processing units
7. State the procedure to apply and obtain licenses
8. State the procedure for filing an entrepreneurs' memorandum

Unit 3.1: Site Selection for Food Processing Unit

Unit Objectives



At the end of this unit, participants will be able to:

1. State the factors for selecting the site for food processing unit
2. State the design and construction requirements for food processing unit

3.1.1 Site Selection for Food Processing Plant

Market planning and site selection is not based solely on where target audience lives anymore. As consumers' schedules get more complicated and competition increases, identifying an ideal location and market has become much more complicated. Appropriate site selection is important because of the following

1. An appropriate location can lessen the cost of production and distribution to a substantial extent. Such reduction in the cost of production helps in elevating either the competitive strength or the profit margin of the business.
2. Initiation of an enterprise involve a relatively large permanent investment. If the selected site is not proper, all the money invested on factory building, installation of machinery etc. will go waste and the owner will have to suffer a great loss.
3. Location put constraints for the physical factors of the overall plant designs, ventilation requirements, storage capacity for raw materials, transportation requirements for input material and finished products, energy requirements cost of labour, taxes and construction costs.
4. Location of plant decides the nature of investment cost to be incurred.
5. Government policies sometimes also play an important role in site selection.

It's not just a matter of securing a piece of property and renovating. The location you choose will have a direct impact on the financial success of your new facility.

Here are few factors need to consider when selecting a site for new food plant:

- **Local geography:** Geography matters when it comes to site selection. Geographical logistics actually have the biggest impact on the bottom line. It is important as different area abides to different government regulations, which can be strict at one and flexible at another. If the process involves of high-water usage and draining, it is important to check the drainage facility of the local area and related laws and if they it fits in the requirements.



Fig 3.1.1: Factors for site selection

- **Daily operations:** While selecting the food processing facility at certain area, the most important being the source of raw material and the targeted market for finished goods.
 - ❑ The distance to sources of raw materials and customers is definitely something to keep in mind. To manage costs, it is not advisable to be too far from either of them. Raw material should be available within the economical distance. Easy availability of supplies required for maintenance and operation of the plant should also be considered.
 - ❑ Cost of distribution is an important item in the overhead expenses. So it will be advantageous to be near to the center of demand for finished products. Importance of this is fully realized if the material required for the manufacturing of products are not bulk and freight charges are small.
 - ❑ In addition, the surrounding transportation infrastructure is crucially important. Since freight charges of raw materials and finished goods enter into the cost of production, therefore transportation facilities are becoming the governing factor in economic location of the plant. Robust access is key, both for transporting materials and finished products to and from the site. Depending upon the volume of raw materials and finished products, a suitable method of transportation like rail, road, water and air transport is selected and accordingly plant location is decided.
- **Utility and water availability and cost:** During site selection, check that the area will be able to suffice the needs of electricity, water and others and its availability.

Is everything required in terms of utilities available at the preferred site?

Is the infrastructure in place to meet your needs?

If not, then additional time and expenses required to make the site suitable for operations. One should focus on reducing the cost incurred on getting utilities to facility.

- **Environmental Issue:** It is crucial to understand the nearby area for any environmental issues. There should be no garbage dump area in the nearby vicinity of facility as it shall attract rodents, pest, and flies to the facility.
- **Other Industry:** In case the location has nearby industry, it shall be important to understand their chemical discharge, effluent discharge, and quality of air. Reason being chemical or effluent if consist of hazardous material, might contaminate the soil and water of the area that will indirectly affect the quality of the product being processed in your facility. Pollutant air being released will also affect the finished good product quality.
- **Labor cost and quality:** Technology has profoundly emerged with using fully automatic plant with less human intervention for constant quality product, but still there are many factories that are depend on skillful workers for processing.

Labor costs and quality are key to the success of a new plant. Be sure to examine both current and projected wages to understand how choosing that site will affect the cost of operations — now and in the future. Also determine the availability of skilled workers in the surrounding area; a brand new facility can't be successful without qualified personnel to run it.

- **Climatic and atmospheric conditions:** The climate of the region/ area where the plant is to be located has an important bearing on both the capital and operational costs.

Normally following aspects are considered -

- Rain fall or snow fall in the area concerned
 - Ambient temperatures
 - Humidity
 - Wind velocities and direction
 - Incidence of cyclones, storms etc.
- **Facility type:** It's not just the site, but the building you'll put on it that's important to think about. Will you build a greenfield facility or retrofit an existing building? Many times, retrofitting isn't ideal since food manufacturing facilities have unique and specific needs. Your operations will likely have certain food safety, processing and structural requirements, so it's important to take these into consideration when selecting a site.
 - **Government incentives:** The investment incentives offered by various governments vary greatly. Certain regions offer tax breaks for economic improvement zones that they're trying to revitalize. Some municipalities also offer lower impact fees or a stipend to cover the cost of training the population. It pays to know what's on offer while selecting a site.

In Food industry the supply uncertainty of raw material is extremely high, as they are dependent on factors such as season and site of production hence the best proposed location is always where risk can be reduced and mitigate risk.

Activity

Give your thoughts for the following points in the table given below. Note down the description after discussion.

Sr. No.	Factor to analyse	Write the description
1	Availability of raw materials	
2	Proximity to market	
3	Infrastructural facilities	
4	Government policy (subsidies and other benefits)	
5	Manpower availability	
6	Local laws, regulations and taxation	
7	Ecological and environmental factors	
8	Competition	
9	Land costs	
10	Climatic conditions	
11	Political conditions	

Unit 3.2: Finance Management

Unit Objectives

At the end of this unit, participants will be able to:

1. State the various ways for arranging loans to start a business
2. State the requirements for arranging finance for starting a business
3. State the procedure for applying and arranging finance

3.2.1 Ways to Arrange Finance

Launching any business requires capital investment, whether the start-up is any type of MSME or large enterprise. Funding makes your business initiatives with a strong base and helps to expand and grow further. Finding funds for a start-up business can be sometimes challenging and tiresome task. Here are few important financing techniques that shall help in finding finance



Fig 3.2.1: Ways of finance arrangement

1. **Self-finance:** Self-financing or personal investment is the best way of financing used by several entrepreneurs. Even when you take a loan or ask a venture capitalist or government entity to provide funding for your business, they still have this question; how much capital you shall be investing in your business? Investing your own savings is the best option for first-time entrepreneurs. In the later stages of business, you can easily opt for business loans and lenders shall not have a reason to deny it, as they will consider the stability of business and it will be low-risk factor for them.

2. **Angel Investor:** Individuals with surplus cash are known to be Angel investors and these individuals are interested in investing in new businesses. The risk involved in these investments by Angel investors is more, as compared to loans offered by financial institutions, as Angel investors plan to invest for higher returns to profit. India's popular Angel investors include Mumbai Angels, Indian Angel Network, and Hyderabad Angels.
3. **Crowdfunding:** Crowdfunding is a concept of collecting funds from multiple investors via social networking sites and web-based platforms for majorly business purposes. Online Crowdfunding web portals raise funds for various other purposes like social causes, charities, ideas, disaster relief, events, etc. This concept or idea helps in raising funds for start-ups or first-time business owners. India's leading Crowdfunding platforms include Kickstarter, Ketto, Catapooolt, FuelADream, Fundable, Indiegogo, Milaap, Wishberry, etc.
4. **Loans under government schemes:** The government of India has launched various loan schemes that aim to benefit Start-up enterprises, SMEs, MSMEs, as well as promote the socio-economic growth of rural India. Loan schemes initiated by the Government of India to help Start-up enterprises include the MUDRA loan scheme under Pradhan Mantri Mudra Yojana (PMMY), Start-up India, Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE), Stand-up India, Atal Innovation Mission, Make in India, etc.
5. **Loans from private and public sector banks:** Banks are considered to be the first priority for new businesses, as they find it a more reliable and convenient way of getting money. Banks provide funding to new businesses in two forms named term loan and working capital loan. Almost every public and private sector bank of India offers business loans for start-ups. However, the interest rate, loan amount, and repayment tenure offered shall vary from bank to bank.
6. **Loans from NBFCs or MFIs:** In case of no financial history or any credit score, then it shall become difficult to get loans from private or public sector banks. Then, Non-banking Financial Companies (NBFCs) and Micro Finance Institutions (MFIs) can provide business loans based on your requirements without having a credit score or financial history. The interest rates offered by NBFCs and MFIs are comparatively higher, as compared to PSU banks.
7. **Business credit cards:** Credit cards for business purposes have taken a rise since the emergence of start-up enterprises in recent years. If your business does not require large amounts of money at the initial stages of business, then you can use credit cards for transactions and timely repaying the amount to avoid debt or extra interest rates charged in form of penalties.
8. **Peer-to-peer lending:** Peer-to-peer lending is a type of money borrowing where no intermediaries are involved in the whole process. Lenders lend money to borrowers as their investment and borrowers get money at their disposal to invest in their business. In this process, lenders can earn from borrowers, as the interest rate offered is higher, as compared to banks, NBFCs and MFIs. Peer-to-peer lending institutions are regulated by RBI for the betterment of both lenders and borrowers. For start-up enterprises, peer-to-peer lending is a type of loan, whereas for the lender it becomes an investment.
9. **Friends & family:** A big source of funding for entrepreneurs is friends and family. They can provide funding in the form of debt (you must pay it back), equity (they get shares in your company), or

even a hybrid (e.g., a royalty whereby they get paid back via a percentage of your sales).

Friends and family are a great source of funding since they generally trust you and are easier to convince than strangers. However, there is the risk of losing their money and you must consider how your relationship with them might suffer if this happens.

3.2.2 Financial Institutions for Loans to Fund a Business

India has a well-developed financial system, comprising:

- Banks
- Financial institutions
- Non-banking financial companies
- Venture capital companies

These institutions offer financial aid to start-ups as well as existing businesses. Various schemes are being implemented by various banks and financial institutions to cater to the financing needs of the micro, small and medium sized businesses. Some of the schemes offered are

- Working capital finance
- Corporate term loans
- Term finance

3.2.3 Requirements for Arranging Finance

You will be more likely to successfully avail of a loan if you can satisfy the following lending criteria:

1. **Purpose of loan:** To qualify for a business loan, you need to prove that you need funding for an approved cost. Banks usually approve of businesses using loans for the following reasons -
 - Improve Cash Flow
 - Purchase Equipment
 - Pay for Expansion Projects
 - Purchase Inventory
 - Use as Payroll
2. **Business experience:** When reviewing your loan application, banks will consider your business experience also. If you've owned your business for years and have managed your company's finances responsibly, this will be in your favor. However, if you've recently opened your business or have struggled financially, this could be detrimental.

Bankers will be more likely to approve your application if they think you'll remain successful after receiving loan.

3. **Business plan:** When applying for a bank loan, bank can ask to submit business plan. Business plan can help the bank to determine the right loan amount and term.

Before submitting business plan, make sure that it accurately reflects your business's finances, goals, and other relevant information.

4. **Credit history:** When considering for a business loan, bank always do a credit check. They check your personal and business credit scores. Personal credit history especially matters for companies that operate as proprietors or partnerships. In both cases, the business owner assumes partial or complete financial responsibility.

Before applying for a bank loan, make sure that you have good credit scores. If you don't have an excellent credit score, you might not get approved for a bank loan due to the bank's credit requirements. Or, even if you do qualify for a business loan, it might affect the interest rate.

5. **Personal information:** When borrowing money for business, some personal information could affect your ability to qualify. Banks usually ask for the following personal information in your application -

- Addresses
- Criminal record
- Education details
- Tax returns
- Financial statements
- Assets
- Other loan balances

6. **Financial statements:** In addition to personal financial information, banks also require your business's financial statements. The number of statements will vary depending on the bank you're applying to and their requirements.

Most banks will require the following documents -

- A balance sheet
- Accounts receivables
- Profit and loss statements
- Cash flow statements
- Income statements
- Business bank account balances
- Other financial projections

Once submitted, the bank will analyze these documents to check your eligibility for a business loan.

7. **Collateral:** If your business or personal credit history falls below bank loan requirements, you could still receive financing by submitting collateral. Banks define collateral as business or personal property that you mortgage to banks as a guarantee for the repayment of a loan.

Bank will match your collateral value with the value of the loan amount. Banks typically seek structural collateral for larger loans, such as a home or an office.

Other forms of collateral include automobiles, expensive jewelry, and high-end antiques. The expected useful life of your collateral must match the lifespan of the business loan.

8. **Cash flow:** When evaluating loan applications, banks' primary financial concern involves business cash flow.

Does your business generate enough cash flow to repay a bank loan on time?

The bank will ask you to present information about your primary business cash sources to determine this. Most banks understand that managing cash flow is a common challenge for business owners, especially entrepreneurs that own seasonal businesses.

The following documents are required for applying for a loan to start a business:

- Application form
- 1 photograph of the co-applicant
- Income details for the last 2 years with Annexure, Form 16 A -
 - IT returns
 - Balance sheet
 - P/L account statement
- Bank account statements for the last 3 months
- KYC documents of the co-applicant
- Business vintage for 5 years
- **Business proof:** Certificate of Practice

Steps to apply for a Loan

- Write a business plan
- Approach a bank that offers business loans
- Review the lender's loan guidelines and get all the necessary documents, applications and other information required in place
- Submit your complete loan application to the bank, along with your business plan

3.2.4 Procedures After Approval of Loan

Once bank approved your business loan, the loan closing specialist (or closer) will prepare a closing checklist of all required documentation needed on your loan prior to closing. He or she will contact you to schedule a kick-off call to explain the checklist in detail. All parties involved in the loan, including the borrower, the borrower's legal consultants and the lender, will be included on the call.

Closer then review and approve all documents received off the checklist and move the loan into the

last phase of closing. At this point, final loan documentation, including the Note, Deed of Trust, Security Agreement, is prepared and reviewed by bank closing team prior to the signing to ensure all necessary information is included.

During the complete financing process, you have to deal with a group of specialists who bring your loan to completion. Understanding the phases of the loan and the roles of the lending team members will help you gather the appropriate information and navigate the loan process.

3.2.5 Types of Loans

There are types of loans, we can select them as per the finance requirement for a business:

Seed Capital

The term seed capital refers to the type of financing used in the formation of a startup. Funding is provided by private investors—usually in exchange for an equity stake in the company or for a share in the profits of a product. Much of the seed capital a company raises may come from sources close to its founders including family, friends, and other acquaintances. Obtaining seed capital is the first of four funding stages required for a start-up to become an established business.

Seed capital—also called seed money or seed financing—is referred to as such because it is money raised by a business in its infancy or early stages. It doesn't have to be a large amount of money. Because it comes from personal sources, it's often a relatively modest sum. This money generally covers only the essentials a start-up needs such as a business plan and initial operating expenses—rent, equipment, payroll, insurance, and/or research and development costs (R&D).

Margin money

Margin money, in finance is the amount by which the value of collateral provided as security for a loan exceeds the amount of the loan.

Risk Capital

Risk capital is funds invested speculatively in a business, typically a start-up.

Risk capital comes from private equity: Funds belonging to high net-worth individuals and institutions that are amassed for the purpose of making investments and acquiring equity in companies. Venture capital (VC) is a common type of private equity.

Bridge Loan

A bridge loan is a short-term loan used until a person or company secures permanent financing or pays an existing obligation. It allows the borrower to meet current obligations by providing immediate cash flow. Bridge loans have relatively high interest rates and are usually backed by some form of collateral, such as real estate or the inventory of a business.

Short-term working capital

Short-term working capital refers to funds that help you finance the daily operations of your business.

These include inventory or raw material purchase, staff salaries, warehouse or office rent, electricity and maintenance, short-term debt and more.

Medium-Term Loans

A medium-term loan is usually for a period of 2 to 5 years and can be said to be a hybrid of short and long-term loans. Such a loan is often taken for carrying out repair or renovation of the fixed asset. For example, modernizing a showroom.

A medium-term loan is usually skipped when talking about the types of term loans as people may go straight to the long-term loan after discussing the short-term loan. However, it is better to keep the duration of 2 to 5 years under medium-term as terms and condition for such a period is somewhat different from the long-term loan. Like, the interest rate is comparatively higher, while the documentation part is easier when compared to the long-term loans.

Long Term Loans

These types of term loans are for more than five years. Most of the long-term loans are secured, for instance, home loans, car loans, and loans against property. Since the loan is secured, the rate of interest is also lower. However, it can be unsecured as well. In an unsecured loan, no collateral or asset is needed, but the rate of interest is comparatively higher as the lender bears more risk.

EMI for such a loan is also quite low as the payment is spread over a long period. A long-term loan is credit-based, so the better your credit score is, the better the chances that you get a lower interest rate. The amount of the loan will also depend on your credit history and income.

Activity

Answer these questions

1. How much seed capital you have to start with?

2. How are you planning to arrange for this seed capital?

3. How long will it take for you to arrange the seed capital?

4. Have you ever taken loan or are you planning to take a loan?

5. Do you know some sources for loan?

6. Search on internet and note down the details of MUDRA Loan, stand up capital scheme and CGTMSE scheme?

7. Compare the above schemes and write down the scheme that would be suitable as per your requirement?

8. Any change in your plans for seed capital from the above? Note it down here.

Activity

Answer these questions

1. How much seed capital you have to start with?

2. How are you planning to arrange for this seed capital?

Unit 3.3: Entrepreneur's Memorandum

Unit Objectives

At the end of this unit, participants will be able to:

1. State the different registrations and licenses requirements for food processing units
2. State the procedure to apply and obtain licenses
3. State the procedure for filing an entrepreneurs' memorandum

3.3.1 Procedure for Filing Entrepreneurs Memorandum

Pre-requisites:

Before filing for an Entrepreneurs' Memorandum registration, an applicant must ensure that -

- Requirement of the location policy is fulfilled.
- Local zoning and land use regulations of State Government which do not permit setting up of an industry at a location should be adhered to. Application for Industrial License needs to be filled if industry belongs to any or more of following 5 categories.
- Cigars and cigarettes of tobacco and manufactured tobacco substitutes
- **Electronic aerospace and defence equipment:** all types
- Industrial explosives including detonating fuses, safety fuses, gun powder, nitrocellulose and matches
- Specified hazardous chemicals i.e.
 - i. Hydrocyanic acid and its derivatives
 - ii. Phosgene and its derivatives
 - iii. Isocyanides and diisocyanatos of hydrocarbon, not elsewhere specified (e.g. Methyl isocyanine).
- SSI items for manufacturing by non-SSI industrial undertaking.

If the industry does not belong to any of the above mentioned categories, please fill in the Industrial Entrepreneur Memorandum application.

Attaching 'Distance certificate from Directorate of Sugar from the respective State Govt.' along with a copy of certificate from the Survey of India is mandatory in case of Sugar industry.

Use the correct NIC code for filling IEM form. The NIC code can be referred from:

http://dipp.nic.in/English/acts_rules/Press_Notes/NIC-2008.pdf

3.3.2 Filing Entrepreneurs Memorandum

The instructions for filing an entrepreneurs' memorandum are as follows:

1. Memorandum is to be filed with the district industries centre, by a micro, small or medium enterprise, as the case may be, under sub-section (1) of section 8 of the Micro, Small & Medium Enterprises Development (MSMED) Act, 2006.
2. Four copies of the memorandum should be filed.
3. There is no fee for processing the memorandum.
4. Existing units should fill up only part ii of the memorandum.
5. In case of any change in the information, at any point of time, please inform the details within three month to DIC.
6. Write/Type in block (capital) letters.
7. Leave one blank box after each word.
8. Fill up whichever is applicable.
9. All codes other than pin code shall be filled by the office.
10. Form will be machine numbered by the district industries centre.

To be filed at the DIC under whose jurisdiction the enterprise is proposed to be located.

Scan the QR code or click on the link to watch related videos



<https://dpiit.gov.in/index.php>
Entrepreneur's memorendum

Notes



Lined writing area for notes.

4. Start Food Processing Unit



Unit 4.1 – Food Processing Unit Designing and Construction

Unit 4.2 – Food Processing Unit Setup

Unit 4.3 – Food Production and Testing

Unit 4.4 – Marketing and Sale of Food Product

Unit 4.5 – Cleaning and Sanitisation of Food Processing Unit



Key Learning Outcomes



At the end of this module, participants will be able to:

1. State the factors for making the design for food processing unit
2. State the design and construction requirements for food processing unit
3. Discuss the process for manpower recruitment
4. State the need of manpower training
5. List various products and machineries required for food product development
6. State the different registrations and licences requirements for food processing units
7. State the procedure to apply and obtain licences
8. State the different methods of packaging processed foods
9. State the laws and regulations related to product packaging and labelling
10. Discuss process of verifying raw material before production
11. Discuss need of conducting trial production of product
12. Show how to conduct nutritional analysis of product in lab
13. Discuss procedure of food product production
14. Discuss the procedure of marketing through marketing agency
15. Discuss the process and need of distribution channel
16. Discuss ways for managing logistics for food distribution
17. State the cleaning processes used to clean the work area and process machineries;
18. Explain the process of sterilisation;
19. List the different sanitisers used

Unit 4.1: Food Processing Unit Designing and Construction

Unit Objectives

At the end of this unit, participants will be able to:

1. State the factors for making the design for food processing unit
2. State the design and construction requirements for food processing unit

4.1.1 Food Processing Plant Design

Plant design refers to the overall design of a manufacturing enterprise / facility. It moves through several stages before it is completed. The stages involved are - identification and selection of the product to be manufactured, feasibility analysis and appraisal, design, economic evaluation, design report preparation, procurement of materials including plant and machinery construction, installation and commissioning. The design should consider the technical and economic factors, various unit operations involved, existing and potential market conditions etc.

Plant design specifies:

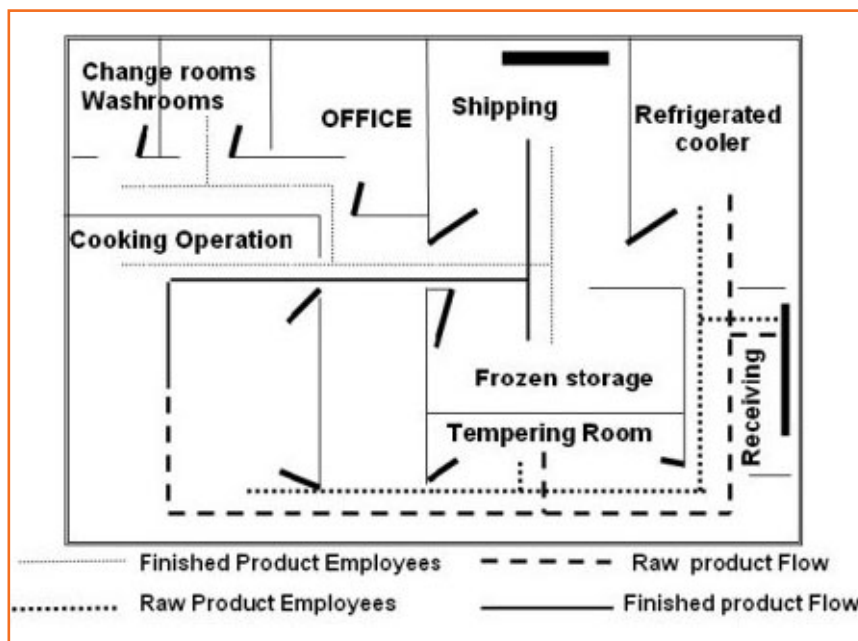


Fig 4.1.1: Sample plant design

- Equipment, utilities and services to be used
- Interconnections and raw material flows in terms of flow charts and plant layouts
- Placement of equipment, storage spaces, shop facilities, office spaces, delivery and shipping facilities, access ways, site plans and elevation drawings
- Process monitoring and control interconnections
- Utility and waste treatment requirements

- Strategic site location, plan and elevation

General design considerations

Food plant designs must provide necessary levels of sanitation, means of preventing product and material contamination and means of preventing or limiting product, raw material, and intermediate product deterioration due to naturally occurring processes. A brief description of some of the design considerations follows.

- **Food processing unit operations:** Food processing involves many unit operations, such as freezing and thawing, freeze drying, curd and gel formation, development of structured gels, cleaning and washing, leavening, puffing, and foaming, slaughtering, slicing and dicing, peeling and trimming, pasteurization and sterilization, baking, cooking, roasting, filling and packaging, canning and bottling, coating and encapsulation, sausage and flexible casing, stuffing, controlled atmosphere storage, fumigation and smoking, churning, fermentation, biological waste treatment, and controlled feeding of confined animals, poultry and fish etc.
- **Contamination prevention:** Contamination prevention will include the facility or use of filtered air, air locks, piping layouts that ensure complete drainage and prevent cross-stream contamination (particularly contamination of finished products by unsterilized or unpasteurized raw material and cleaning solutions), solid material and human traffic flow layouts that also prevent such contamination, suitably high curbs when pipes, conveyors or equipment pass through floors and where gangways pass over processing areas, bactericides in cooling water etc.
- **Sanitation: Sanitation prevents contamination and it should be facilitated by providing or using:** impermeable coated or tiled floors and walls, pitched floors that ensure good drainage, polished vessels and equipment that do not contain dead spaces and which can be drained and automatically cleaned in place, sanitary piping, clean-in-place (CIP) systems etc.
- **Deterioration: To minimize product and raw material deterioration, provisions should be made for:** refrigerated and controlled environment storage areas, space and facilities for product inspection and for carrying out quality assurance tests, surge vessels for processed material between different operations etc.
- **Seasonal production:** Food plants have to be sized to accommodate peak seasonal flows of product without excessive delay, and in some cases, have to be highly flexible so as to handle different types of fruits and vegetables. Modelling of crop and animal growth processes can be of great help in scheduling production and adequately sizing plants.

4.1.2 Food Processing Plant Layout

Plant layout shows an optimum arrangement of different facilities including human resource, plant and machinery, material etc. Since a layout once implemented cannot be easily changed and costs of such a change are substantial, the plant layout is a strategic decision. A poor layout will result in continuous losses in terms of higher efforts for material handling, more waste and rework, poor space utilization etc. Hence, need to analyze and design a sound plant layout can hardly be over highlighted.

Some of the important objectives of a good plant layout are as follows:

- Overall simplification of production process in terms of equipment utilization, minimization of delays, reducing manufacturing time, and better provisions for maintenance.
- Overall integration of man, materials, machinery, supporting activities and any other considerations in a way that result in the best compromise.
- Minimization of material handling cost by suitably placing the facilities in the best flow sequence
- Saving in floor space, effective space utilization and less congestion / confusion,
- Increased output and reduced in-process inventories
- Better supervision and control
- Worker convenience and worker satisfaction
- Better working environment, safety of employees and reduced hazards
- Minimization of waste and higher productivity
- Reduction in unnecessary capital investment

According to the principle of flow, the layout plan arranges the work area for each operation or process so as to have an overall smooth flow through the production / service facility. The basic types of flow patterns employed in designing the layout are -

1. **I-Flow:** separate receiving and shipping area.
2. **L-Flow:** when straight line flow chart is to be accommodated.
3. **U-Flow:** very popular as a combination of receiving and dispatch
4. **S-Flow:** when the production line is long and zigzagging on the production

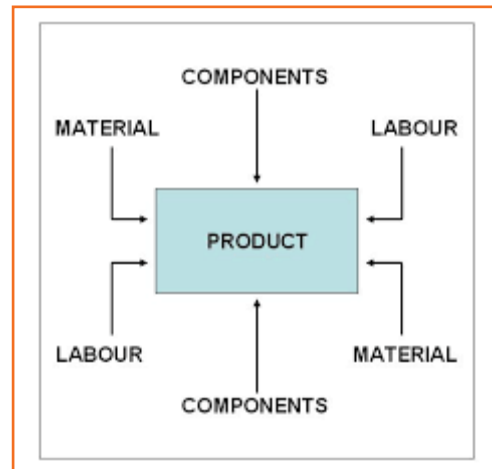


Fig 4.1.2: Sample plant layout

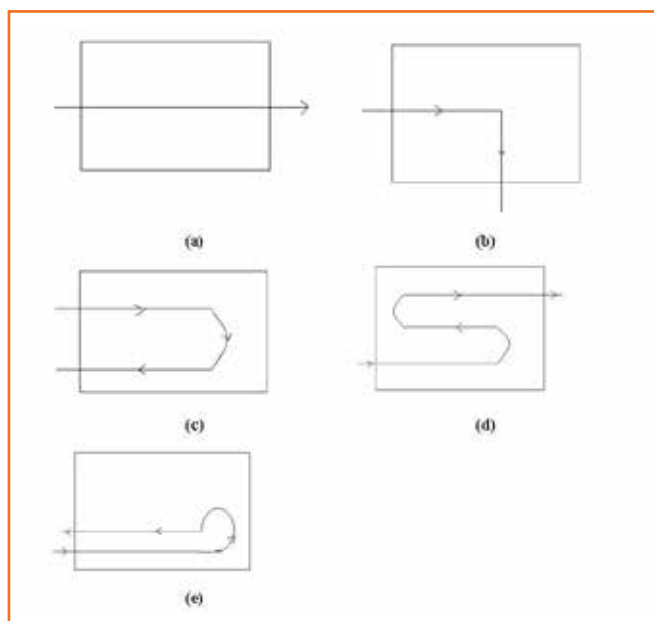


Fig 4.1.3: Types of flow patterns

floor is required.

5. O-Flow when it is desired to terminate the flow near where it is originated

The overall layout design procedure can be considered to be composed of four phases Viz.,

Phase I: Location

Phase II: General Overall Layout

Phase III: Detailed layout

Phase IV: Installation

Some important guidelines that help in the layout design are:

- Plan from whole to details
- First plan the ideal and then move to the practical aspects
- Material requirements should be central to the planning of process and machinery.
- Modify the process and machinery by different factors to plan the layout

Though there is always an overlap in the different phases of layout design the major steps that have to be followed in the layout design are outlined as follows -

- Address the problem in terms of its objective, scope and factors to be considered
- Collect basic data on sales forecasts, production volumes, production schedules, part lists, operations to be performed, work measurement, existing layouts, building drawing etc.
- Analyze data and present it in the form of various charts
- Plan the production process and its arrangement
- Plan the material flow pattern and develop the overall material-handling plan
- Estimate plant and machinery requirements Select material handling equipment
- Determine storage requirements
- Plan auxiliary and service facilities including their arrangement
- Determine space requirements and allocate activity areas
- Develop plot plan and block plan i.e. integrate all plant operations
- Develop detailed layouts and plan building along with its arrangement
- Evaluate, modify and check the layouts
- Install layouts and follow up

4.1.3 Construction Requirements

1. Building

- Must be of sound construction and of an adequate size
- All exterior doors and windows must be tight fitting and capable of restricting the entrance of insects and rodents

2. Floors

- Floors and floor coverings of all food preparation areas, food storage areas, equipment and utensil washing areas and walk-in-refrigeration units must be of smooth, impervious and durable material
- Floor coverings in food preparation areas, equipment and utensil washing areas must be covered and sealed at all floor and wall junctions
- All floors in washrooms must be made of impervious durable materials and wall and floor junctions covered and sealed

3. Walls, Partitions and Ceilings

- All walls and partitions, equipment and utensil washing areas and walk-in refrigeration units must be smooth, non-absorbent and easily cleanable
- Studs, joists and rafters in food preparation areas, equipment and utensil washing areas and walk-in refrigeration units must be covered and not exposed
- Ceilings must be smooth, non-absorbent and easy to clean

Notes



Unit 4.2: Food Processing Unit Setup

Unit Objectives

At the end of this unit, participants will be able to:

1. Discuss the process for manpower recruitment
2. State the need of manpower training
3. List various products and machineries required for food product development
4. State the different registrations and licences requirements for food processing units
5. State the procedure to apply and obtain licences
6. State the different methods of packaging processed foods
7. State the laws and regulations related to product packaging and labelling

4.2.1 Manpower Recruitment and Training

Manpower recruitment

Recruiting Process is a process of identifying the jobs vacancy, analyzing the job requirements, reviewing applications, screening, shortlisting and selecting the right candidate. In addition, these practices also ensure consistency and compliance in the recruiting process.

A good recruitment process allows you to find qualified candidates quickly and efficiently. The process requires intentional planning and constant evaluation.

Benefits of an effective recruitment process:

- Lower hiring costs
- Better quality of new hires
- Increases employee productivity

Types of recruitment:

1. **Internal:** In internal recruitment, recruiters post openings on organisational job boards and hire individuals for new roles internally.

There are various types of internal recruitment -

- **Transfers:** When an employee needs to shift within the organization for the same

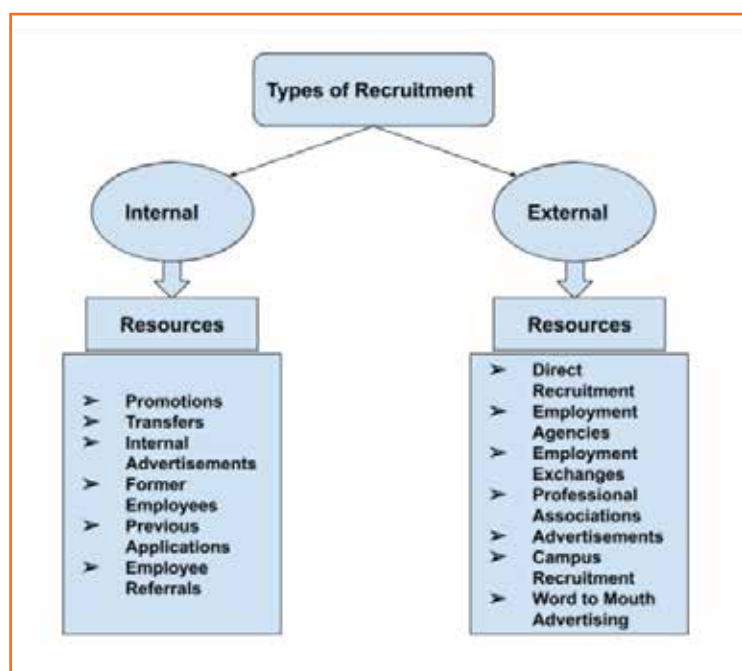


Fig 4.2.1: Types of recruitment

role, it's known as a transfer. This type of recruitment method is often used for employees to operate in different geographical locations where more people are needed on board.

- **Promotions:** It refers to upgrading an employee's job title or job role. It helps organizations hire people for higher positions.
 - **Re-Employment:** In this type of recruitment, an organization decides to reach out and hire previous employees. This process is time-efficient and cost-effective as organizations already have the experience of having the individual on board.
2. **External:** This type of recruiting is also called sourcing or staffing. It involves recruitment of manpower for jobs that are particularly hard to fill through external sources.

There are various types of external recruitment -

- **Advertisements:** Here, organizations directly promote new and open positions through various media. Some organizations continue to use newspaper ads while others post in on their website or social media platforms. Potential candidates apply directly.
- **Job Portals:** In this type of recruitment, organizations advertise vacant positions through third-party portals or platforms. While some portals mediate the interview process, others allow organizations to contact the candidates directly.
- **Educational Institutes:** One of the biggest sources of external recruitment, academic institutions are instrumental in driving the recruitment efforts of an organization. Also known as campus recruitment, this type of recruitment method helps organizations visit institutions or campuses and hire recent graduates.
- **Internships and apprenticeships:** Offering internships and apprenticeships is an excellent way to get to know the strengths of individuals and can be considered to be a working interview. During the contact period, line and hiring managers can evaluate the potential to identify interns and apprentices who can be upskilled and developed to fill future roles.

Steps of recruitment process



Fig 4.2.2: Steps of recruitment process

3. Identify the hiring needs
 - You can determine your hiring needs by checking
 - Any gaps in performance, skills or proficiencies that you need to fill
 - A sudden increase in workload that your team cannot seem to handle
 - Any employees who will be leaving the company soon
4. **Prepare job descriptions:** A complete job description helps you know what to look for in potential candidates. It also serves as a checklist for candidates to tick before they decide they are suitable for the role and apply- which means, more relevant candidates.

The elements that should be included in a job description are

- Title
 - Responsibilities
 - Necessary qualifications and skills
 - Compensation, benefits, and perks
 - Location
5. **Plan a recruitment strategy:** In recruitment strategy, you need to consider
 - The geographical area you'll be targeting
 - The method of recruitment (employee referrals, social media, video interviews, etc.)
 - Creating relevant job ads
 - Channels for posting job ads (social media networks, job boards, company websites, etc.)
 6. **Screen and shortlist candidates:** When you received a pile of resumes, now you have to screen and select the candidate resumes as per recruitment.
 7. **Interview:** Now have to conduct interviews or assessments of selected candidates on the basis of your recruitment strategy.
 8. **Make the offer:** Now you have to check with the candidate's references. And if everything checks out, you can make the offer.
 9. **Employee Onboarding:** Then comes employee onboarding. This is where you make the new employee settle in. This does not only include showing the new person around the office and introducing them to others.

Manpower training

An educated workforce plays a vital role in the success of food manufacturing industries. Some of the types of training include Machine operating training, quality check, industrial safety, maintenance, In-plant instructions, compliance training, etc.

Advantages of having a trained workforce in the food processing industry :

- Better product quality
- Fewer mistakes

- Higher efficiency
- Better food safety
- Higher employee morale
- Fewer worker injuries

All food processors should have a well-designed food safety training program that includes a diverse curriculum and answers the whos, whats and whys associated with food safety activities.

There are essentially three stages of training for food handler that must be instructed and/or trained. These categories are based on the job of the individual and also on the type of food they handle. Stages are -

Stage 1 - The Essentials of Food Hygiene

Key points for staff to be made aware of -

- Keep yourself clean and wear clean clothing
- **Always wash your hands thoroughly:** before handling food, after using the toilet, handling raw foods or waste, before starting work, after every break and after blowing your nose
- Before you start work, tell your supervisor of any skin, nose, throat, stomach or bowel trouble or infected wounds. You are breaking the law if you do not
- Ensure cuts and sores are covered with a waterproof, high-visibility dressing
- Avoid unnecessary handling of food
- Do not smoke, eat or drink in a food room, and never cough or sneeze over food
- If you see something wrong, tell your supervisor
- Do not prepare food too far in advance of service
- Keep perishable food either refrigerated or piping hot
- Keep the preparation of raw and cooked food strictly separate
- When reheating food ensure it reaches piping hot
- Clean as you go - keeping all equipment and surfaces clean
- Follow any food safety instructions provided, either on food packaging or from your supervisor.

Stage 2 - Hygiene Awareness Instruction

This level of training should help staff to develop knowledge of the basic principles of food hygiene, but needs to be made relevant to the individual's role. Focus should be placed on instructing staff how to carry out their job hygienically to ensure food safety, including any control or monitoring processes your business has outlined as part of HACCP.

Key points must include:

- Business policy and the priority placed on food hygiene
- 'Germs' and how these have the potential to cause illness
- Personal health and hygiene, including the need for high standards, reporting illnesses and rules

on smoking

- **Cross contamination:** cause and prevention
- **How to safely store food:** protection and temperature control
- Waste disposal, cleaning and disinfection, detailing materials, methods and storage
- The risks of 'foreign body' contamination and how to avoid
- Awareness of pests.

Stage 3 - Formal Training

This training develops a level of understanding of the basic principles of hygiene.

Food hygiene training covers the following areas:

- Food poisoning microorganisms types and sources
- Premises and equipment
- Common food hazards, including physical, chemical and microbiological
- **Personal hygiene:** basic rules and responsibilities
- Preventing food contamination
- **Food poisoning:** symptoms and causes
- Cleaning and disinfection
- Legal obligations
- Pest control
- **Effective temperature control of food, for example:** storage, thawing, reheating and cooking.

4.2.2 Production of Products: Process and Machineries

As the consumers are shifting toward value-added food products, food industries have to buy various types of machinery to develop a wide range of products.

Now let's discuss about few food processes and their machineries

4.2.2.1 Fruit and Vegetable Processing

The fruit and vegetable processing sub-sector deals with processed foods, semi-processed foods, and packaged foods that are made from fruits and vegetables. This includes -

There are certain parameters that are important to consider when selecting a fruit/vegetable for processing. They are -



Fig 4.2.3: Fruits and vegetables products

- Demand for processed food made from that vegetable/fruit
- High quality produce
- Continuous supply
- Huge supply in case of seasonal fruits/vegetables

These parameters are important to ensure that raw materials withstand the processing and preservation process.

Methods of Processing Fruits and Vegetables

Some common methods of processing fruits and vegetables are:



Fig 4.2.4: Methods of processing fruits and vegetables

4.2.2.2 Food Grain Milling Sub Sector

The food grain milling process differs according to the raw material used and the finished product. Following is a general overview of the food grain milling process -

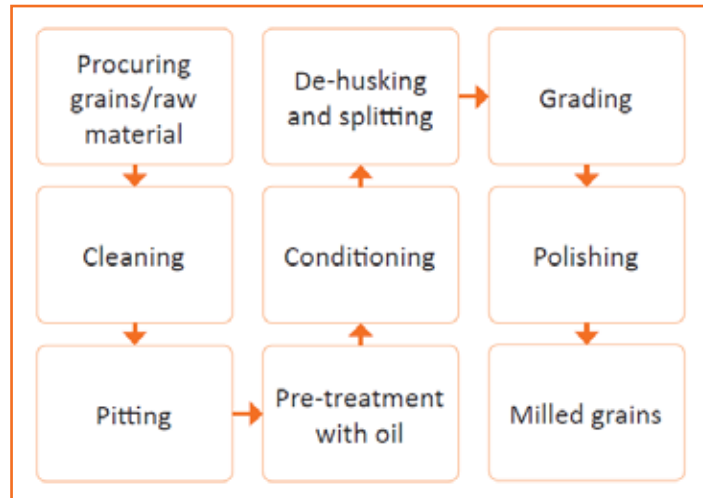


Fig 4.2.5: Food grain milling process



Fig 4.2.6: Food grain milling processes

4.2.2.3 Fish and Sea food Processing

Types of fish and sea food products



Fig 4.2.7: Fish and sea food products

Different methods of fish and sea food processing

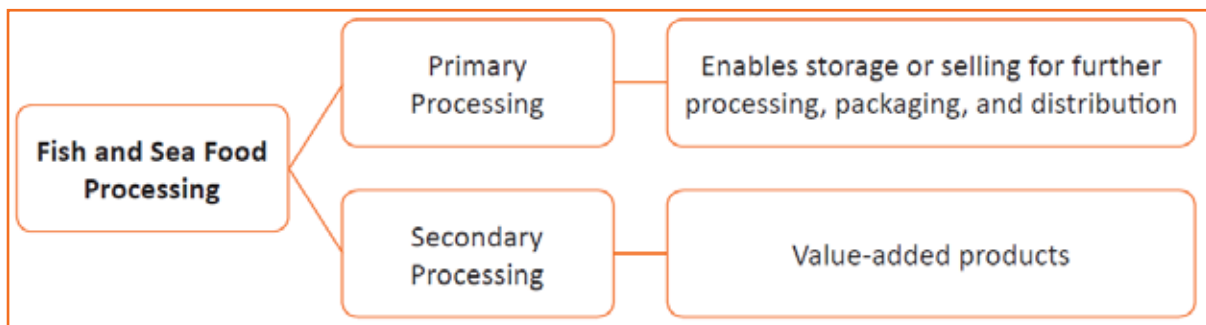


Fig 4.2.8: Fish and sea food processing

- Primary processing - First methodical assessment of the fish before processing
- Secondary processing - Includes processes at any stage beyond primary processing

The various methods in both the processes are listed below:

Primary Processing	Secondary Processing	
Washing	De-boning	Salting
Cleaning	Skinning	Drying
Heading	Chilling	Smoking

Primary Processing	Secondary Processing	
Gutting	Freezing	Canning
Grading	Gilling	Marinating
Filleting	Scaling Finning	Packaging

Table 4.2.1: Fish and sea food processes

4.2.2.4 Dairy Industry

Dairy farming in India is moving from traditional family-run businesses to an organised dairy industry. With technological advances in the recent years, India has seen tremendous growth in dairy farming. Modern dairy farms manage a large herd of cattle and supply milk for processing to large dairy industries.

Units of a Dairy Processing Plant

A dairy processing plant consists of several units as per the size and operational requirement. Some of these are -

Milk Reception Section	HACCP/ISO
Process Section	Cheese Section
Butter Oil Section	Pizza Section
Powder Section	Pouch Section
Ice-Cream Section	RTF
APS Section	Frozen Foods Dispatch

Table 4.2.2: Units of dairy processing plant

4.2.2.5 Baking Industry and Bakery Products

A bakery is an establishment that prepares baked goods. Baked goods are produced using two methods viz. fermentation and non-fermentation. Depending upon the process of production, baked products are classified as -

Fermented Products	Non-fermented Products
Breads and buns	Cookies
Cakes	Biscuits

Fermented Products	Non-fermented Products
Croissants	Crackers

Table 4.2.3: Classification of baked products



Fig 4.2.8: Bakery products

Baking is the method of cooking food with the help of dry heat that is controlled in an oven, hot ashes or hot stones. A combination of three forms of heat is used for the baking process. These three forms are -

Radiation	Hot Air Circulation	Conduction
Heat is radiated from walls of the oven	Hot air is blown in circles inside the oven	Heat is conducted through baking pan or tray

Following is a process chart giving an overview of the entire process of baking:

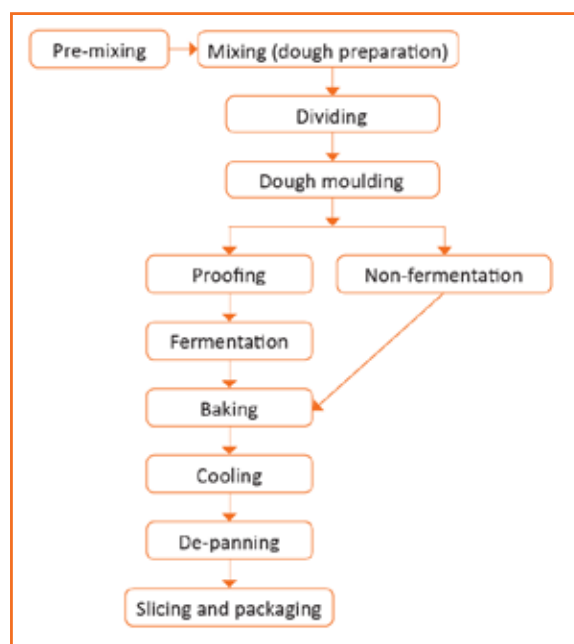


Fig 4.2.9: Process of baking

4.2.2.6 Meat and Poultry Industry

Meat and Poultry Industry

- Today, the poultry (chicken) sector in India is not only vibrant but also one of the best in the world.
- India is the ninth-largest producer of poultry meat, fifth-largest egg producer, and the eighteenth largest producer of broilers in the world
- As the human population increases, the poultry industry continues to grow to meet the demand for poultry products
- Goat and lamb meat are relatively less popular in India. However, they have short generation intervals, are abundant in production, and marketing of goat-sheep meat products is far easier
- There is huge demand for halal meat across the world as well. The market for this is growing rapidly throughout the world, specifically in the Middle East

Types of Meat and its Sources

Types	Sources
Bacon	Meat from a pig that is treated with smoke or salt, and is often cooked in rashers (thin pieces)
Beef	Meat from a cow
Bush meat	Meat of wild animals that has been killed for food
Chicken	Meat of a chicken
Crab meat	Meat from a crab
Dark meat	Meat from a part of a bird such as leg that is darker than the rest
Light meat	Meat from a part of a bird that is lighter in colour
Duck	Meat of a duck
Horse flesh	Meat of a horse
Lamb	Meat from a young sheep
Mutton	Meat from an adult sheep
Partridge	Meat from a partridge
Pork	Meat from a pig
Poultry	Meat from birds such as chickens
Turkey	The meat of a turkey

Table 4.2.4: Meat products

Meat Products

Groups: cured-raw meats and cured-cooked meats.

Given below are various examples of cured raw meat, cure-cooked meat, ready-to-eat meat, and dried meat products -



Fig 4.2.10: Meat products

4.2.3 Registrations and Licences

As per the Food Safety and Standards Act, 2006 (FSS Act), it is mandatory for every food business operator involved in the manufacturing, processing, storage distribution and sale of food products has to obtain FSSAI Registration or License.

FSSAI stands for Food Safety and Standards Authority of India which is an organization that monitors and governs the food business in India. It is an autonomous body established under the Ministry of Health & Family Welfare, Government of India.

Under FSSAI, There are three types of registrations:

1. **Basic Registration:** Turnover less than 12 lakhs or and quantity less than the specified units as prescribed by the FSSAI depending upon product to product. The FSSAI registration form that the

applicant has to fill to obtain FSSAI basic registration is Form A.

2. **State FSSAI License:** Turnover more than 12 lakhs and up to 20 crores or 30 crores in some cases and quantity less than the specified units as prescribed by the FSSAI depending upon product to product. The FSSAI registration form that the applicant has to fill to obtain an FSSAI state license is Form B.
3. **Central FSSAI License:** Turnover more than 20 crores and quantity more than the specified units as prescribed by the FSSAI depending upon product to product. The FSSAI registration form that the applicant has to fill to obtain an FSSAI state license is Form B.



Fig 4.2.11: Types of FSSAI licences

Documents required

For applying the registration or for getting license under State or Central Government, following documents are required -

- Photo identity proof of the food business operators.
- Business constitution certificate, i.e. partnership deed, certificate of incorporation, shop and establishment licence or other business registration certificate.
- Proof of possession of business premises, i.e. rental agreement, NOC from the owner of the rented premises, utility bills etc.
- Food safety management system plan.
- List of food products manufactured or processed.
- Bank account information.
- Supporting documents (if required) like NOC by Municipality or Panchayat, Health NOC, copy of License from the manufacturer, etc.

Apart from the above-mentioned general documents, certain specific documents are required for obtaining the FSSAI state license and FSSAI central license. The specific documents required to obtain the FSSAI state license are -

- Form B duly completed and signed
- Plan of the processing unit showing the dimensions and operation-wise area allocation
- List of Directors/ Partners/ Proprietor with address, contact details, and photo ID
- Name and list of equipment and machinery used with the number and installed capacity
- Authority letter from manufacturer nominated a responsible person name and address
- Analysis report of water to be used in the process to confirm the portability

- Copy of certificate obtained under Coop Act 1861/Multi-State Coop Act 2002

Apart from the general license, the following specific documents are required to obtain FSSAI central license -

- Form B duly completed and signed
- Plan of the processing unit showing the dimensions and operation-wise area allocation
- List of Directors/ Partners/ Proprietor with address, contact details, and photo ID
- Name and list of equipment and machinery used with the number and installed capacity
- Authority letter from manufacturer nominated a responsible person name and address
- Analysis report of water to be used in the process to confirm the portability
- Source of raw material for milk, meat etc
- Recall plan wherever applicable
- Ministry of Commerce Certificate for 100% EOU
- NOC/PA document issued by FSSAI
- IE code document issued by DGFT
- Form IX
- Certificate from Ministry of Tourism
- Supporting document for proof of turnover and transportation
- Declaration form

Procedure for obtaining FSSAI registration online

- Pay FSSAI registration fees
- Attach required documents
- Food industries receive UARN (Unique Application Reference Number).
- Inspection of the premises
- Issuance of FSSAI license certificate

4.2.4 Labelling and Packaging of Food Product

Labelling

Labels are used on every kind of product to brand, decorate or provide information for the consumer. People rely on food labels to tell them what a product contains, its nutritional value, and how it was produced. For example, shoppers may look for products labelled “**organic**,” “**no trans fats**,” or “**antibiotic-free**” etc.

There are different types of labels seen across industries:

1. Single Labels- It provides a way to convey an important message



Fig 4.2.12: Labelling

without having to reprint the whole package on to the product for brand promotion.

2. Bar Code Labels - These are perfect choices for industrial tracking of packages shipped from warehouse to warehouse.
3. Wrap Around Labels –These contain all the information of the product. Are clear plastic to blend in with shrink film and reveal your product. As per company requirements, it could be customised.
4. Pallet Labels - It helps to track the location of inventory through every step of the manufacturing, packaging, and shipping process. Ensure easy identification of the contents of boxes.

In order to safeguard the interest of the consumer, The Food Safety and Standards (Packaging and Labelling) Regulations, 2011, provides that every packaged food article be labelled and it shall provide the following information

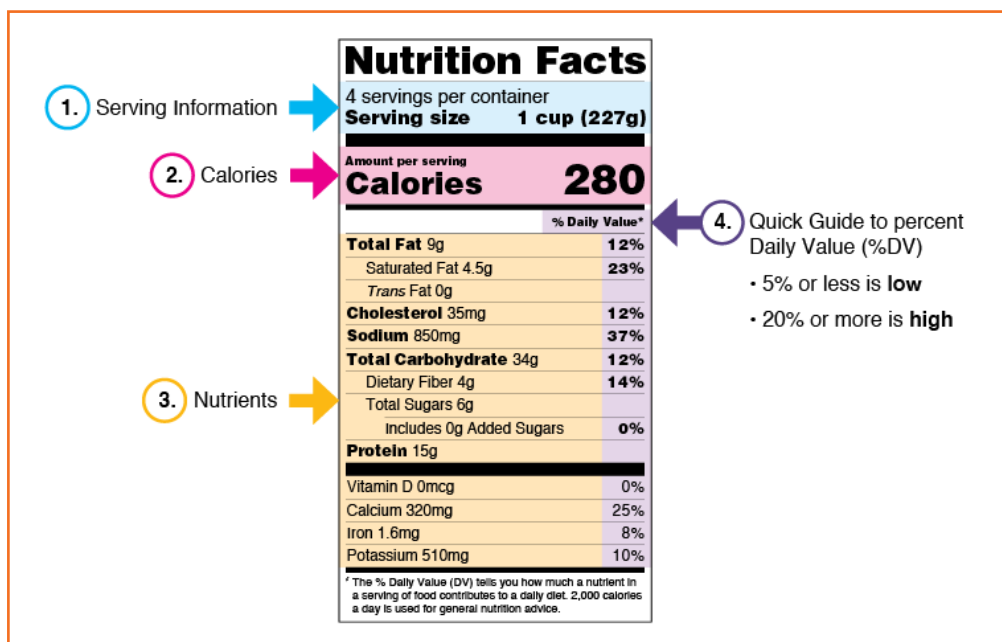


Fig 4.2.13: Information on food packaging

- Name of food
- List of ingredients
- Nutritional Information
- Declaration regarding veg or non-veg
- Declaration regarding food additives
- Name and complete address of the manufacturer or packer
- Net quantity
- Code No./Lot No./Batch No.
- Date of manufacture or packing
- Best Before and Use By Date
- Country of origin for imported food and
- Instructions for use

In addition to the above information the manufacturer or the packer has to also ensure that the label complies with the general requirements of labelling prescribed under the regulations i.e. the label should not become separated from the container, contents on the label shall be correct, clear and readily legible and shall be in English or regional language, etc.

Packaging

Packaging is an inseparable part of a product, and it has the ability to gain the attention of the consumer.

Types of packaging materials used by food industries:

- Paper and cardboard
- Metal containers
- Glass
- Plastic containers
- Flexible plastic films
- Polyethylene

Packaging is split into three types depending on the role and purpose:



Fig 4.2.14: Types of packaging

- **Individual Packaging:** This is for individual products. For example, individual packaging is what is used to wrap each individual piece of candy. The purpose is to protect the product from water, humidity, light, and heat.
- **Inner Packaging:** This is used to group individually packaged products in a bag. This is the bag that is filled with individually packaged candy. Inner packaging is the unit that is sold at retail stores, and it is important to design an inner package that expresses the appeal of the product.
- **Outer Packaging:** Outer packaging is the unit of the largest package, such as a cardboard box or wooden crate. The main purpose is to protect the product from dirt and breakage.

Suggestions of packaging based on food product

Name of food	Type of Packaging
Milk	<ul style="list-style-type: none"> • Pasteurised flavoured milk in glass bottles capped/ LDPE (Low-density polythelene) lined cartons/aseptic cartons • Sterilised flavoured milk in glass bottles capped/ sanitary cans/ poly-laminated paper packs in tetrahedron • Sterilised cream In hermetically sealed containers/LDPE lined cartons/ aseptic cartons • Condensed milk in hermetically sealed containers/LDPE lined cartons/ aseptic cartons sealed by cement • Fermented milk products and dahi in glass bottles/ any other suitable container and capped. Stored at temperatures below 10X • Rosgolla are packed in open top sterilised sanitary cans or polystyrene tubs or any other suitable containers with as little air as possible • Milk powder, cereal weaning foods in hermetically sealed and clean containers in such a way as to protect them from deterioration, a mixture of N,and CO, gas has to be passed
Fruits and Vegetables	<ul style="list-style-type: none"> • Raw vegetables packed loose In bulk/ packed in containers for trading and transport. It is done in new loosely woven gunny bags / wooden/ plastic crates or in lined / unlined corrugated fiberboard boxes • Onion and garlic packed In sound, clean, new loosely woven gunny bags, net bags, bamboo baskets / palm leaf baskets / wooden crates / lined or unlined corrugated fiberboard boxes to allow proper aeration of the bulbs • Tomatoes to be packed in baskets / wooden boxes /lined or unlined corrugated fiberboard boxes such that they are not unduly pressed when he lid is closed • Fresh chillies to be packed in gunny bags / bamboo baskets/ corrugated boxes lined or unlined with proper aeration • Super grade fruits to be packed wrapped individually either in tissue paper/ any other suitable material before being packed into the container to prevent it from rubbing along with straw • Juices, jams, jellies and marmalades to be packed in glass bottles/open top cans. Containers have to be hermetically sealed which could be lacquered or plain

Meat, Fish and Poultry Products	<ul style="list-style-type: none"> • To be wrapped in polyethylene sheets or bags and delivered in clean, rust free and closed containers • If the total time is of more than two hours ice is added • Meat supplied in distant market then the packaging must be able to withstand repeated handling and an outlet for draining water • CO, used for chilling if the destination is in range of one hour • CO, and ice used if it is being transported to a distance of 6 hours
Meat, Fish and Poultry Products	<ul style="list-style-type: none"> • To be packed in butter paper / grease proof clean wrapping material put in big polyethylene cover • The products are vacuum packed using suitable wrapping materials such as PET/ LDPE
Meat, Fish and Poultry Products	<p>Meat</p> <ul style="list-style-type: none"> • To be wrapped in polyethylene sheets or bags and delivered in clean, rust free and closed containers • If the total time is of more than two hours ice is added • Meat supplied in distant market then the packaging must be able to withstand repeated handling and an outlet for draining water • CO, used for chilling if the destination is in range of one hour • CO, and ice used if it is being transported to a distance of 6 hours
	<p>Cooked Meat</p> <ul style="list-style-type: none"> • To be packed in butter paper / grease proof clean wrapping material put in big polyethylene cover • The products are vacuum packed using suitable wrapping materials such as PET/ LDPE
	<p>Dressed chicken</p> <ul style="list-style-type: none"> • To be packed into suitable sized polyethylene bags/ other suitable packing material • Before final sealing one needs to ensure no air is trapped inside • Vacuum packing or shrink wrapping of the packs is done • After the air inside is expelled, the bag should be sealed on a sealer
	<p>Egg powder</p> <ul style="list-style-type: none"> • It is gas packed using nitrogen in suitable tinplate containers/ flexible packaging materials • PET/LDPE laminate is used as alternate options

	<p>Fish</p> <ul style="list-style-type: none"> • The fresh product should be packed in polyethylene lined insulated containers, made of plywood, country wood/ plastic • The thickness of insulation may vary from 15 to 30 mm depending upon the storage period and the mode of transport • Thermocole or fiberglass may be used as insulation material • Adequate drainage of melted ice may be provided • Bread is to be wrapped in slice form in LDPE coated poster paper/ clean waxed paper, greaseproof paper/non-toxic wrapper
Bakery and Confectionery	<ul style="list-style-type: none"> • Bread is to be wrapped in slice form in LDPE coated poster paper/ clean waxed paper, greaseproof paper/non-toxic wrapper <p>Biscuit</p> <ul style="list-style-type: none"> • It is done tins, cardboard paper or other suitable material such as cello/ LDPE.OPP/LDPE, PET/LDPE and also paper/LDPE, foil/LDPE • The biscuits should not come in direct contact with the packing material other than grease-proof/sulphate paper, cellulose film/ aluminium foil laminate • The biscuits in tins should not come in direct contact with the metal walls • Cakes to be wrapped/packed in clean waxed paper, greaseproof polyethylene, glassine/LDPE/ other suitable wrapper or tins
Protein-rich foods	<ul style="list-style-type: none"> • Protein-rich extruded foods be packed in moisture proof paper bags (multilayered, polyethylene lined)/ pouches made from BOPP/LDPE, glassine/LDPE/ HDPE (high density polyethylene) woven bags • Peanut butter to be packed in wide-mouthed glass jars/ polystyrene tubs / suitable container of the required size and shape which is airtight sealed • Flours and starches to be packed in LDPE coated jute bags or LDPE coated raffia bags • Edible spray dried potato flour to be packed in tins. These should be packed materials made of HDPE / metallised polyester bags / pouches made from other flexible laminates such as BOPP/LDPE

Oils and Fats	<ul style="list-style-type: none"> Oil packaging material used may be tinsplate containers, glass bottles, rigid plastic containers of HDPE, food grade PVC, PET and flexible pouches made of plastic film/foil/laminate Fat, vanaspati to be packed in suitable sealed packages, as, flexible packs and well closed tinsplate containers of specific weights
Food Grains and Food Grain products	<ul style="list-style-type: none"> Cereal grains to be packed in packed in new, clean jute bags or LDPE coated jute bags and raffia bags Cereal flours the material for packaging should be LDPE coated jute bag/LDPE coated raffia bags or single sound A-twill or B-twill jute bags
Sugar and honey	<ul style="list-style-type: none"> Sugar to be packed in polyethylene coated Hessian bags/ coated raffia bags/ twill jute bags sealed by stitching Cube sugar to be packed as per weight of 0.5kg per carton lined with LDPE. Honey to be packed in wide mouthed containers of glass/ tinsplate lidded with non-corrosive caps/cork washers
Stimulant foods	<ul style="list-style-type: none"> Tea to be packed in flexible packaging materials / laminates such as LDPE, paper coated LDPE, PET/LDPE and BOPP/LDPE to retain freshness Roasted and ground coffee to be packed in tinsplate, glass containers, metal foil, plastic films/laminated pouches of paper/LDPE, PET/LDPE and BOPP/LDPE Chocolates to be packed in tinsplate, plastic, greaseproof paper, aluminium foil or laminates made of paper/LDPE, BOPP/LDPE to avoid odour contamination
Alcoholic Drinks and Carbonated Beverages	<ul style="list-style-type: none"> Carbonated beverages to be filled in glass containers/ cans/ PET bottles/ plastic containers/dispensing units as per ISO regulations Beer to be filled in glass /PET bottles/cans placed in corrugated boxes or wooden cases as per ISO regulations
Spices and condiments	<ul style="list-style-type: none"> Chillies to be packed in jute bags/ pouches made from PET/EVA or BOPP/EVA/ suitably lined wooden cases/ LDPE coated raffia bags Black pepper to be packed in jute bags/ LDPE coated raffia bags sealed by stitching Cloves to be packed in airtight containers made of a material which does not affect the cloves like PET/LDPE

Table 4.2.5: Suggestions of packaging based on food product

Activity

Here is a checklist of the various licenses/registrations you need to obtain for setting up a food processing unit

- Write down your responses in below table
- Add to the list if there are any additional requirements
- Note down all/any challenges and how to resolve them in getting the licenses

Sr. No.	Factors to analyze	License Obtained (Yes/No)	If not obtained -have you applied for it (Yes/No)	Documents required for the license application	Expected date of license being obtained
1	FSSAI/ Food license <ul style="list-style-type: none"> • Central License • State License 				
2	Food packaging compliances				
3	Compliances related to food contamination				
4	Environment and pollution-related clearances Pollution control Industries that require water and effluent disposal Industrial units functioning outside industrial area Registration and licensing of a boiler				
5	GST Registration				
6	Land Registration				
7	Fire Department				
8	Health Trade License				
9	ESI				

10

Electricity meters

Write down the license process of getting the above license /registration

Scan the QR code or click on the link to watch related videos



www.youtube.com/watch?v=orvTPKFeGe0
FSSAI License registration 1



www.youtube.com/watch?v=QV4GGGo8Z6U
FSSAI License registration 2



www.youtube.com/watch?v=iTNRv0IZaCl
Types of packaging



www.fssai.gov.in/upload/uploadfiles/files/Packaging_Labelling_Regulations.pdf
FSSAI Guidelines for packaging and labelling

Unit 4.3: Food Production and Testing

Unit Objectives

At the end of this unit, participants will be able to:

1. Discuss process of verifying raw material before production
2. Discuss need of conducting trial production of product
3. Show how to conduct nutritional analysis of product in lab
4. Discuss procedure of food product production

4.3.1 Verification of Raw Material

Raw material samples should be manually tested for quality conformity to specifications before it is permitted for production and manufacture use. The raw material and packaging material should be examined and cross checked for their conformity to specifications.

The quality of a food material is judged in terms of its nutritional value, purity, wholesomeness and palatability. If any of these properties is not optimal, the food quality is affected. Raw material examinations include test for genuineness and composition, freedom from contaminant, and conformity with official or factory standards.

After all parameters of raw materials are met, a sample batch of raw materials is put through a trial run to get a preview of the end product. All control tests are run on the sample and any adjustments as required are made in the processed product. The equipment is examined for any sign of corrosion due to the acidity or alcohol content of the materials used. Approval for processing is given only after all quality specifications on the sample run have been met.

Steps to ensure the quality of raw materials

1. Give clear material specifications to supplier and factory
2. Conduct an audit of supplier's quality system
3. Conduct lab tests on high-risk raw materials
4. Conduct raw materials inspections on an as-needed basis

4.3.2 Trial Production of Food Product

Production trials are an opportunity to risk assess and scrutinise each ingredient and how they are processed at each step involved in creating the new product. Ingredients used in small sample level trials may now be needed in a very different format. This might be to ensure they can be handled easily in the manufacturing site, or are readily available in quantities that will be needed or to secure costs which

allow the end product to be profitable.

You may also identify a need for intermediate preparation steps to convert the ingredient to the size and format that you need to get the best results for your product and improve production efficiencies.

Also consider if the shelf life during which each ingredient remains food safe are compatible with one another – for example you could not add a fresh herb garnish with only 2 days shelf life to a product seeking to have 8 days life.

Trial production can be used to assess following:

1. how long the residual quantity can be held before use or needing to be disposed of,
2. the storage practices and locations which best protect food safety
3. how to eliminate any risks of the item becoming contaminated by other raw materials or the wider factory environment.

Assessing Process

- The nature of the product, and any of the sub-components that are created as the product progresses through the factory, will have an influence on how it interacts with processing steps and equipment.
- Review and access each processing step to ensure that they are suitable and effective. As the product moves through each manufacturing phase, understand the impacts of each process step and document factors which are impacting on aspects such as product quality, production efficiencies, hygiene and clean-down and food safety.

It gives you valuable information that will help to ensure your trial will run more smoothly but they may often suggest ways to improve efficiencies – and you are engaging them with the new product at an early stage and showing you value their opinions and expertise.

4.3.3 Food Nutrition Analysis – Laboratory Testing

Nutritional analysis is the process of determining the nutritional content of food. It provides information for nutrition labeling on food packaging that manufacturers are required to include to comply with the labeling regulations of destination countries.

Testing of product and test results should come from an accredited laboratory with appropriate technical expertise in analysis of the purity, or determination of the content of many substances in mixture samples.

The food laboratory will conduct tests based on existing regulations or standards, both national and international standards. Therefore, it is important for food companies to choose an accredited food laboratory. Food testing laboratories must be accredited to standards such as the ISO 17025 standard. ISO 17025 is a general requirement for the competence of food testing laboratory. A certified

Nutrition Facts	
8 servings per container	
Serving size 2/3 cup (55g)	
Amount per serving	
Calories 230	
	% Daily Value*
Total Fat 1g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mg	10%
Calcium 20mg	20%
Iron 45mg	45%
Potassium 200mg	6%

Fig 4.3.1: Nutrition details

laboratory will implement a good working system to improve and maintain its testing validity.



Fig 4.3.2: Food testing

For this approach, food companies send samples of food to laboratories for analysis. By utilizing scientific methods and equipment the food sample is analyzed for the different components that compose the nutritional information needed.

The laboratory analysis measures the actual levels of nutrients in the prepared food, thus providing a high level of accuracy of the analysis. The analysis accounts for the changes in nutritional value that occur due to the cooking and processing of the food. This is of extreme value as calories tend to increase or decrease during the cooking process depending on the method used. For example, added fats increase calorie content during frying and decrease during grilling. Moreover, salt can be added during food preparation which increases the final sodium content of the dish.

4.3.4 Food Product Production

All starting incoming raw materials should be verified as per the specifications guidelines. Each and every manufacturing operation must be performed in line with written procedures, instruction and guidelines. Every needed in-process controls must be carried out and recorded. Wherever required all bulk products should be properly labelled until approved by QMS. Special care and attention must be given to overcome the cross-contamination issues in all stages of processing, productions and manufactures.

Food production refers to the process of conversion of raw materials into finished food products. Food production involves washing, cutting, and combining ingredients to produce edible products. Manufactured food should be consistent in texture, taste, and appearance. The production process also involves dispersing food products into appropriate reheating and serving sizes. The process of food production involves three major steps, namely-

- Input
- Processing
- Output

Input refers to the different raw materials required for the process of food production. Processing is the process of converting raw ingredients into edible form. And the output is the final product produced.

There are various methods of food production, and those include

- Fruit juice processing and Preservation
- Chopping,
- Pasteurization,
- Slicing of vegetables
- Steaming,
- Grilling,
- Curing food,
- Frying,
- Grinding and marinating,
- Broiling,
- Emulsification,
- Boiling,
- Fermentation of food and beer and many more

It is important to ensure that the output is maximum with minimum input and wastage. It can be done by food production management.

4.3.5 Food Product Inspection

Production, processing inspection: Examination of the finished product is carried out to determine as to what extent the desired quality specifications have been achieved. Careful inspection is made of the external conditions of the product. e.g. A packaged can containing fruit slices where both ends are concave is said to be 'flat' and is said to be good while the cans which have the problem of flipper, springer or smell do not pass inspection.

In case of canned products, a sample of the passed cans is opened and the contents are inspected. Where the product is dried, samples are examined for a blemish count. The dried product is regularly checked for its reconstitution value to enable the correct cooking instructions to be supplied on the package for the user.

Tests are also performed to check certain physical properties, such as crispiness, colour, viscosity and texture. Microbiological examinations are carried out to check whether proper hygienic procedures have been followed and whether the finished product is safe to eat or not.

Sensory evaluation: After physical, chemical and microbiological examination have been performed on a finished product with a satisfactory result, the product is considered ready for distribution, but only after its sensory quality has been assessed. To the processor, a palatable product ensures sales because palatability attracts consumers and to the consumer, palatability satisfies his gustatory senses.

Unit 4.4: Marketing and Sale of Food Product

Unit Objectives

At the end of this unit, participants will be able to:

1. Discuss the procedure of marketing through marketing agency
2. Discuss the process and need of distribution channel
3. Discuss ways for managing logistics for food distribution

4.4.1 Marketing of Food Product

Brand positioning and packaging play a huge role in boosting sales of food and beverage products. Food industries should position their products well in the market according to ongoing market trends.

Marketing through marketing agencies

Marketing agencies, also called marketing firms or marketing companies, help clients implement and manage marketing operations and strategies to achieve their business goals.

A marketing agency can do for your business

- **Identify valuable marketing strategies:** Marketing agencies work with clients to pinpoint marketing strategies that will drive the best business results and maximize return on investment (ROI).
- **Implement marketing solutions:** Marketing agencies execute and manage marketing campaigns for clients.
- **Evaluate marketing results:** Marketing agencies monitor marketing efforts and use data to improve campaign results.

Benefits of marketing agency

1. Marketing agencies help you identify result-driving strategies
2. Marketing agencies help you manage and implement campaigns
3. Marketing agencies help you monitor results and optimize campaigns

But, the rise of E-commerce platforms has increased the sales of processed foods exponentially. Direct to Customer (D2C) marketing provides opportunities for food processing businesses to sell their products directly to consumers through online channels by eliminating intermediaries and retailers.

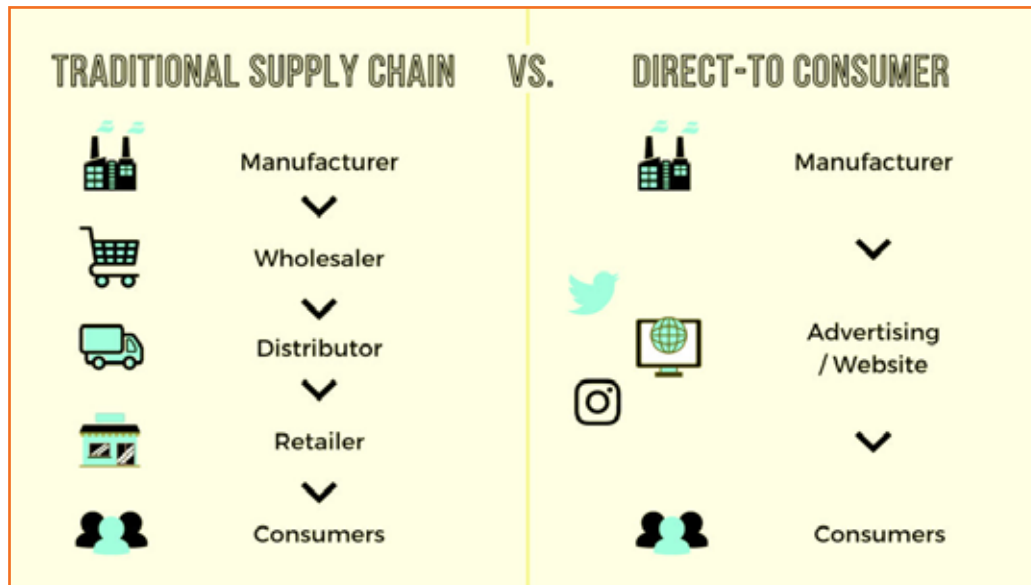


Fig 4.4.1: Methods of distribution

Why food processing businesses should choose D2C marketing?

- Direct access to consumers and their data.
- Control over brand messaging and brand positioning.
- Higher consumer engagement.
- Increased profit margins.
- Personalized customer experience.

4.4.2 Distribution of Food Product

A food supply chain includes all of the processes which includes the manufacturing, administration, utilization, and discarding of food items.

During this task, a food item is moved from manufacturer to consumer while the money used by customers to pay for the item is dispensed to the individuals who work at different stages of the chain.

Every part of this operation requires man-made resources or raw materials to function. Because each stage of the supply chain affects every other stage, it's essential to streamline the entire process to prevent high costs or inefficiencies.

The 5 stages of the food supply chain include-

- Farm - This is where the ingredients, meat, fruits vegetables, food, beverages originate and are purchased.
- Processing - At this stage, plants and animals are converted into edible form.
- Distributor - Once the food is edible, it is transported and distributed to the necessary retailer/supplier. Distributors sell items, manage inventories, reduce costs, and do other actions to add value to the food item.

- Retailer - This is the process used to deliver the products to the consumers. It encompasses everything from obtaining the distributed items to selling them.
- Consumer - The consumer purchases the food item from the retailer.



Fig 4.4.2: Stages of distribution channel

There are different short and long-term internal and external factors that affect the supply chain process, resulting in raised costs or inefficiencies.

Distributors

The key role of a food distributor is providing food and related items (like cups, plates, and napkins) to food service operators e.g., grocery store, restaurant, chef, school cafeteria.

Food distribution involves more than transporting food from a manufacturer or food distribution center to where consumers will purchase it.

Hiring food service distributors makes marketing and selling more convenient, as the manufacturer doesn't have to manage dedicated fleets or invest in logistics themselves to distribute their product.

Warehousing and storage are additional considerations for food manufacturers. While large distributors operate their own warehouses.

Top-rated food distributors communicate with their partners effectively, ensure that the product is delivered on time and without any waste, which is essential to becoming more sustainable. Having an unreliable partner can be damaging to a company's reputation, so selecting an appropriate distribution partner is very important.

Benefit of distributor in marketing

Food distributors can be great for marketing and selling the products they carry to food service operators.

- They are easy to access
- Have their own pre-established channels
- Long-standing relationships already in place

4.4.3 Managing Logistics of Food Distribution

Logistics refers, specifically, to the planning, execution, and control of the flow of goods in an efficient and effective way, both in terms of transportation and storage, with information to meet customer requirements.

Finished products and raw materials have different lifespans depending on the items to be delivered. Keeping food fresh, safe, and quality assured is crucial for the business. It is important to choose the right method of transporting food. It also helps food businesses to

- Maintain its credibility in meeting food standards;
- Follow food safety transportation standards to avoid food contamination; and
- Deliver goods to any part of the world in a timely manner.

Best practices when transporting food

Food handling, packing, and transporting are important factors of food safety. Being aware of the best practices and compliance with regulatory standards can help organizations ensure quality foods are being delivered to their customers. Here are the best practices when transporting food are -



Fig 4.4.3: Best practices of food distribution

1. **Product:** It is the most important element of food delivery. It is valuable to preserve its quality and ensure it is delivered safely to the customers. Here are best practices when handling food that is being prepared for delivery.
 - inspect goods for insects and pests to avoid widespread infestation;
 - use airtight containers to store dried goods and avoid using cardboard boxes;
 - discard damaged goods immediately to prevent contamination;
 - maintain the appropriate temperature and keep humidity levels as low as possible.
2. **Transportation:** It is an integral part of the modern food system. It is a fact that foods can easily be contaminated if the containers and vehicles are unclean. All transportation modes should be

in good condition and have the capability to keep food at the right temperature. Here are best practices to secure food transportation -

- choose the appropriate method of transportation;
 - ensure vehicle roadworthiness to avoid delivery delays;
 - keep it clean and in good condition in a way to minimize food contamination;
 - separate different types of food such as raw food and ready-to-eat food from non-food items; and
 - refrigerate certain types of food that is required to be kept at a low temperature
3. **People:** All staff and food handlers should be properly trained to maintain food safety and food hygiene. Employees should be careful in loading and transporting goods to ensure it stays intact to maintain the quality of the products. It is the employees' responsibility to -
- secure proper loading and unloading of goods;
 - maintain good personal hygiene;
 - monitor sanitation associated with food transportation procedures and
 - keep communications between shipper, transporter and receiver.

Food transportation issues

Different industries face various challenges, and the food industry is not exempt. These challenges made companies identify gaps and strive to improve their food transportation. There are some transportation issues that must be aware of -

- **Delivery of product on agreed time:** It can be set depending on the parameters such as pallet configuration, appointment scheduling, confirmation processes, business operating hours, and preferred carriers that are agreed upon by both parties. Being unable to comply with the said dates considering the parameters set, can lead to business disruption, decreased profitability, and customer dissatisfaction.
- **Refrigerated Shipping:** Perishability is one of the most common factors to consider when transporting foods. It is important to consider food lifespan while selecting the best transportation method. Use of transportation with freeze-ability or has control on temperature when shipping temperature-sensitive goods such as medical products, ice cream, meat, wine, and others is recommended.
- **Less-than-Truckload (LTL) Shipping:** This is a good option for manufacturers who do not have enough freight to fill in a full truck, but it also involves high risks. A large mix of products loaded together may trigger threats of contamination.
- **Handling and Contamination:** Food handling is a process of preparing food that is safe for public consumption. It is necessary to comply with safe food handling processes to avoid contamination which may lead to outbreaks of foodborne illnesses. It is important to keep the vehicle clear of debris, clean and odor-free before loading the products. The presence of any cross-contaminant could spread throughout the packaging and spoil the goods being shipped. Multiple transfers of goods can also damage the packaging or the product itself.

Unit 4.5: Cleaning and Sanitisation of Food Processing Unit

Unit Objectives

At the end of this unit, participants will be able to:

1. State the cleaning processes used to clean the work area and process machineries;
2. Explain the process of sterilisation;
3. List the different sanitisers used

4.5.1 Cleaning and Sanitisation

Cleaning and sanitisation of the work area is extremely important for every food-handling operation. Hence, it is important to know about

- The materials and equipment used to clean the work area
- The method of using these materials and equipment
- The method of cleaning the work area
- The frequency of cleaning the process machineries

The food processing industry follows standard procedures for cleaning the work area. This is to ensure that there is no bacterial growth due to presence of leftover food particles. For cleaning purposes, the work area is divided into two.

They are:

Food contact surfaces	Non-food contact surfaces
Work tables	Overhead structures
Utensils	Walls, ceilings, and shields
Equipment	Lighting equipment
Tools	Refrigeration equipment
Machines that process foods	Air conditioning, heating or ventilating systems

Table 4.5.1: Division of work area for cleaning

Equipment, Chemicals, and Sanitisers Used for Cleaning

Every organisation in the food processing industry follows a cleaning schedule. For instance, a processing unit may follow a weekly, monthly or yearly cleaning schedule. To clean the processing unit, the following equipment and tools are used -

- Cleaning or washing tank

- Cleaning knives and spoons
- Cleaning or sanitising agents
- Cleaning brushes and scrubbers
- High spray nozzle jets

Some common types of cleaners and sanitising agents to clean the food contact and non-food contact surfaces are:

Cleaning agents	Used for	Risk	Safety measure
Hypochlorites like potassium hypochlorite, sodium hypochlorite, and calcium hypochlorite	Cleaning stainless steel food contact surfaces	Leads to corrosion	Ensure pH and concentration levels are maintained
Liquid chlorine	Internal cleaning of stainless steel equipment and vessels	Leads to corrosion	Ensure concentration levels are maintained
Hydrogen peroxide	Killing bacterial spores, pathogens, spoilage organisms, and other microorganisms	Has a strong odour	Use in well-ventilated and open spaces
Ozone	Cleaning food*contact and non-foodcontact surfaces like equipment, walls, floors, drains, conveyors, tanks, and other containers; Killing microbes	No risk involved since it leaves no residue	Safe to use

Table 4.5.2: Some common types of cleaners and sanitising agents

4.5.2 Cleaning Processes

Cleaning processes used to clean the work area and process machineries in food industry are -

Clean-In-Place (CIP)

CIP is a method used for internal cleaning of machineries. It is done without dismantling pipes, vessels, process equipment, filters or fittings. In this process, a sanitising agent is circulated through the entire processing unit with the help of a spray ball. The turbulence created removes soil, ensuring removal of bacteria and chemical residues.

Tips to conduct an effective CIP process:

- Use the right vessels for the right process
- Use the right cleaning and sanitising solutions
- Ensure correct flow rate
- Ensure all connections are clean
- Monitor and verify the entire process

Clean-Out-Of-Place (COP)

COP is conducted at a cleaning station. This method involves dismantling of the equipment. In this process, equipment and units are scrubbed with soap in COP tanks. After this, the tanks are rinsed again to remove residual detergent or chemicals. Equipment and units are reassembled and sanitised once more with heat treatment or sanitising agent.

Tips to conduct an effective COP process:

- Follow the order of tasks
- Use cleaning tanks as much as possible
- Ensure tools used in COP do not lead to contamination

Food processing equipment and units that undergo the COP process are:

- Fittings
- Gaskets
- Valves
- Tank vents
- Grinders
- Pumps
- Knives
- Nozzles

Sterilising-In-Place (SIP)

SIP is the process by which food product equipment is sanitised after the CIP process. It helps to eliminate any residual microbiological contamination.

SIP is a combination of three processes viz. sterilisation, disinfestation, and sanitisation.

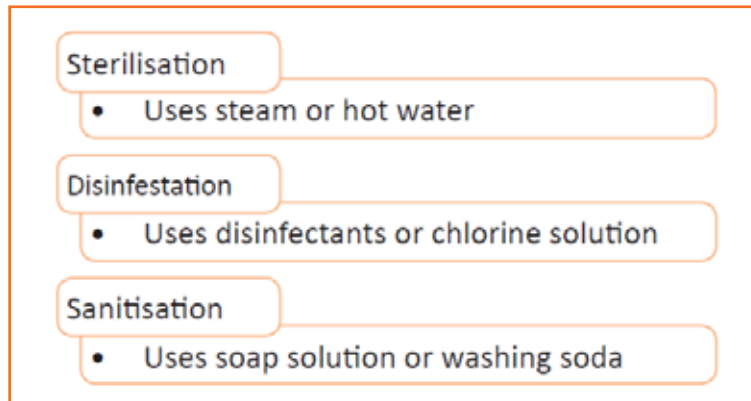


Fig 4.5.1: SIP process

Air-Pressure Cleaning

Air-pressure cleaning method to ensure cleanliness of regularly used equipment. The following chart explains the process in detail -

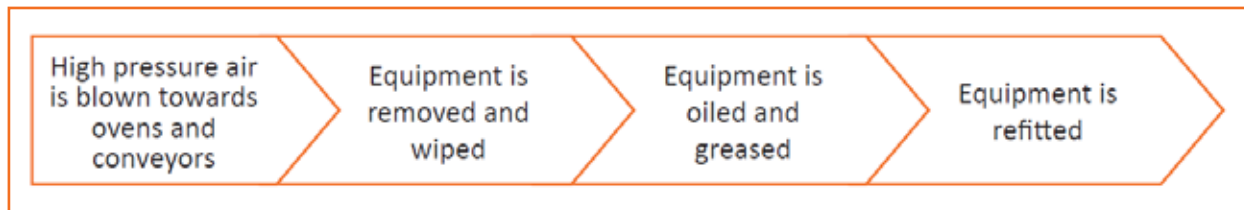


Fig 4.5.2: Air pressure cleaning process

4.5.3 Sterilisation and Sanitisation

Sterilisation

Sterilisation is a process that removes or kills all forms of life and other biological agents like fungi, bacteria, viruses, etc. present in a specified region. These could include surfaces, equipment, tools, floors, etc.

Sterilisation can be achieved with one or more of the following methods:

- Heat
- Chemical
- Irradiation
- High pressure
- Filtration

Sterilisation is distinct from disinfection, sanitisation, and pasteurisation.

Sanitisation

Sanitisers are used to reduce the number of pathogens to a safe level that may be found on service equipment. Chemical sanitisers and hot water sanitisation are both approved methods for sanitising equipment. Approved chemical sanitisers and concentrations are

- **Chlorine (bleach):** 50-100 ppm (200 ppm is the maximum concentration permitted; above 200ppm is considered toxic).
- **Quaternary ammonium:** 200 ppm (unless otherwise specified by the manufacturer)
- **Iodine:** 12.5-25 ppm (Above 25 ppm is considered toxic)

Test strips must be used to check for proper sanitiser concentrations. For hot water, sanitising the surface dishes must reach 160°F. This usually means the dial must reach 180°F.

Notes





5. Complete Documentation and Record keeping



Unit 5.1 – Documentation and Record Keeping



Key Learning Outcomes



At the end of this module, participants will be able to:

1. State the need for documenting and maintaining records of raw materials, process, and finished products
2. State the method of documenting and recording the details of raw material to final finished product

Unit 5.1: Documentation and Record Keeping

Unit Objectives

At the end of this unit, participants will be able to:

1. State the factors for making the design for food processing unit
2. State the design and construction requirements for food processing unit

5.1.1 Need for Documentation

Every organisation has to maintain records of raw material procurement, production processes, and sales. The purpose is to assist in determining whether anything has happened to the food or been done to the food that would render it unsafe (i.e., adulterated). Accordingly, firms must maintain records and government authorities may access the records.

Listed below are some reasons why there is a need for documentation:

- It gives detailed knowledge about running of the business.
- It helps to control product quality.
- It helps to keep track of the money invested in the business.
- It helps to identify the separate costs of raw material or product ingredients.
- It helps to identify the production cost of a particular process.
- It helps to ensure that quality assurance procedures are followed.
- It helps to ensure that the production unit is running smoothly/effectively.
- It works as an evidence for legal procedures.
- It helps to set an appropriate product price.
- It helps to take corrective measures at the right time.

List of documents need to maintain in industry

- The HACCP plan
- List of hazards and details of the hazard analysis
- CCP determination
- Critical limit determination
- Training needs analysis
- Procedures – e.g. standard operating procedures, corrective action procedure

Work Instructions

- List of records need to maintain in industry
- CCP monitoring activities

- Deviations and associated corrective actions
- Verification procedures performed
- Modification to the HACCP plan
- Training undertaken
- Daily records (glass and brittle plastic check)
- Visual inspection reports
- Team meeting records
- Processing records

5.1.2 How to Keep Records?

Every food processing organization follows a more or less similar way of keeping records. Production records keep a log of:

- Quantity and type of raw materials
- Quantity and type of ingredients used
- Processing conditions in which production took place (e.g. the temperature set or the air pressure applied)
- Product quality

Product quality can be maintained only when:

- Same quantity and quality of ingredients and raw materials are mixed in every batch
- Standard formulation is used for every batch
- Standard process parameters are applied for every batch

Every batch of food is given a batch number. This number is recorded in:

- Stock control books (where raw material procurement is noted)
- Processing logbooks (where production process is noted)
- Product sales records (where sales and distribution is noted)

The batch number must correlate with the product code number, which is printed on labels. This helps the processor to trace any fault found in a batch back to the raw material used or the production process.

Example of a stock control book:

Product Name		Batch Number		
Raw Material*	Supplier	Result of inspection for		
		A	B	C

Table 5.1.1: Stock control book

5.1.3 Ways to Maintain Records and Documentation

There are two main ways in which records can be kept: manual record keeping and computerized (or automated) record keeping.

Manual record keeping

You can also opt for a manual record-keeping system. Manual records are beneficial as long as they are accurate and can be understood or explained if questioned.

There are a few traditional ways to manually keep records:

- **Preformatted record books:** Inexpensive, preformatted record books are available at most office supply stores.
- **Ledger sheets:** Ledger sheets (also available at office supply stores) are columnar pads of paper, usually light green in color.

Either way, you must keep a record of each expense -- jotting down a brief description of the business expense, the date incurred, the amount, and to whom it was paid. On the profit side of the equation, you must also keep similar records of any income your business receives.

Advantages of manual record keeping systems include:

- Low cost
- Ease of use

Disadvantages of manual record-keeping systems include:

They are often “single entry” systems, meaning you enter each transaction only once.

You must manually tally up expenses or income by category or by month -- which can be time consuming.

Computerized Record Keeping

Keeping records on a computer follows the same principles as a manual system, except the computer automates the process so it’s faster and more accurate. A simple-to-use software program eliminates the need for a handwritten set of books.

By using a software program for record keeping, you can:

- Eliminate math errors
- Instantly see your income and expenses by category
- Get profit and loss statements and other financial summaries quickly, and
- Interface with compatible tax software programs -- so you don’t need to re-input data come tax time.

Disadvantages of software programs for business record keeping include:

They are slightly more expensive than manual record keeping supplies.

You must have a computer and be comfortable using it on a regular basis.

Activity 1 

- Documentation and record keeping in a business is very important
- Documentation can be categorised into four levels in a business process management



1. Create appropriate documents for manual entry/ ERP/ software application as per the size of the business.
2. Follow the process for documenting and recording as illustrated in the following model of a business process management.

Note - Few sample documents for accounts and finance are given as annexures for reference.

Activity 2

1. Prepare a chart/ list of all the documents and records required for your intended business idea.
2. Follow the steps discussed above and mention the process and documents/records to be maintained against each.
3. Prepare sample documents/records (using a spreadsheet application) for your intended business idea.

Scan the QR code or click on the link to watch related videos



<https://www.youtube.com/watch?v=kcpGIHBpphA&t=154s>
Documentation and Record keeping

6. Food Safety, Hygiene and Sanitation for Processing Food Products



Unit 6.1 – Sanitation and Hygiene

Unit 6.2 – Safety Practices

Unit 6.3 – Good Manufacturing Practices (GMP)

Unit 6.4 – Food Safety Practices

Unit 6.5 – Hazard Analysis and Critical Control Point (HACCP)

Unit 6.6 – Introduction to Food Microbiology



Key Learning Outcomes



At the end of this unit, participants will be able to:

1. State the personal hygiene and sanitation guidelines;
2. State the food safety hygiene standards to follow in a work environment;
3. Follow the fire safety practices in the work area.
4. State the importance of safety, hygiene, and sanitation in the food processing industry;
5. Follow the industry standards to maintain a safe and hygienic workplace;
6. State the storage requirements for raw materials and finished products;
7. Determine the quality of food and intake measures to prevent spoilage;
8. Follow stock rotation based on FIFO/FEFO;
9. Follow HACCP principles to eliminate food safety hazards in the process and products;
10. State the types of food microbes;
11. State the causes for food spoilage;
12. State the process for food spoilage;
13. State the criteria to check food spoilage;
14. State the need for food preservation;
15. State the different types of food preservation processes.

UNIT 6.1: Sanitation and Hygiene

Unit Objectives



At the end of this unit, participants will be able to:

1. State the personal hygiene and sanitation guidelines;
2. State the food safety hygiene standards to follow in a work environment.

6.1.1 Personal Sanitation

Sanitation and hygiene are the most important aspects to take care of when working in a food processing area. Some important sanitation and hygiene practices that must be followed are:

Maintain a high standard of personal cleanliness viz. have a bath every day and wear clean clothes to work.

Wear Personal Protective Equipment (PPE) such as aprons, mouth mask, head cover, face mask, hand gloves, gum boots, and beard cover mask at all times during work hours.

Always keep your finger nails trimmed.

Always keep your hair trimmed and wear a hair net while working.



Fig. 6.1.1. Personal sanitation



Fig. 6.1.2. Washing hands with soap and water

Wash your hands and feet at the designated area or wash stations provided.

Wash your hands with soap and water each time before you enter the production area.

Refrain from smoking, spitting, chewing paan, sneezing or coughing over any food when in the production area.

Do not handle food when suffering from a disease, illness, burns, injury or infection.

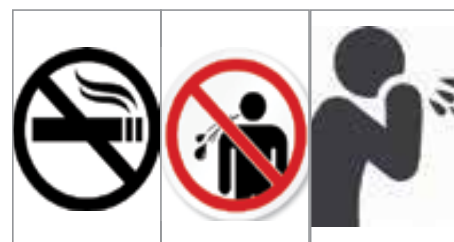


Fig. 6.1.3. Do not smoke, spit, cough



Fig. 6.1.4. Timely medical treatment

Take proper and timely medical treatment when you are ill or if you have met with an accident.

Visit a registered medical practitioner at regular intervals to keep a check on your health.

Scan the QR code or click on the link to watch related videos



<https://www.youtube.com/watch?v=gNEx8P9UqPA&t=37s>

Personal Hygiene

Notes



UNIT 6.2: Safety Practices

Unit Objectives

At the end of this unit, participants will be able to:

1. Follow the fire safety practices in the work area.

6.2.1 Symbols

There are some symbols that you must know and understand to ensure safety in case of an emergency or fire. They are:



Caution



Danger Fragile Roof



Dangerous Chemicals



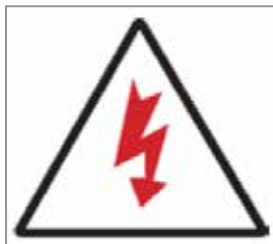
Do Not Enter



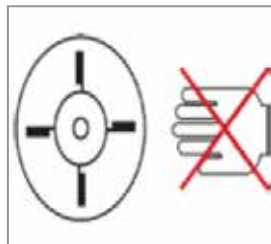
Danger Scaffolding Incomplete



Beware of Electric Shock



Electric Hazard



Never put your Hand Inside
During the Operation



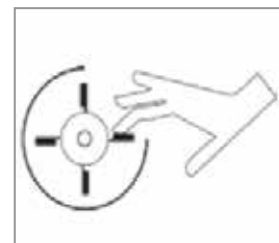
Highly Flammable



Hot Surface Do Not Touch



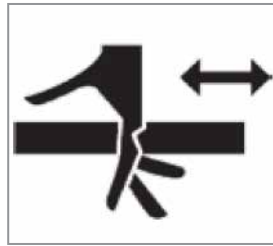
Mind Your Head



Never Open the Cover During
the Operation



Use the Dustbin



Never Touch Moving Part



Wear Eye Protection



Wear Protective Clothing



Warning Slippery Floor



This is a Tobacco Free Workplace



Assembly Point



Fire Exit

Fig. 6.2.1. Safety symbols

6.2.2 Emergency Measures

During an emergency, you must follow certain measures to tackle the situation in an organised manner. These measures are:

- Do not panic
- Respond to your senior immediately or inform the matter to the concerned person
- Prepare against the emergency situation by keeping a fire bucket and a water source handy
- Evacuate the work area

After the emergency, you must:

- Report the situation to a senior or the concerned authority
- Undertake recovery measures

Fire Safety Measures

Just like emergency measures, some common fire safety measures must be followed in case of fire. They are:

- Press the closest fire alarm button (if available)
- Call the fire brigade
- Assemble at the assembly point or designated area for safety
- Evacuate the building from the closest fire exit

Types of Fire and Fire Extinguishers

Choosing the right extinguisher can prevent property damage and save lives					
Types of Fire Extinguishers →		Water	Foam	CO ₂	Dry Chemical
Types of Fire ↓					
A	Class A: Paper, Wood, Plastic Fabric, Rubber, Trash	✓	✓	✗	✓
B	Class B: Oil, Petrol, Some Paints and Solvents	✗	✓	✓	✓
C	Class C: Electrical Equipment, Appliances, Computers	✗	✗	✓	✓

Fig. 6.2.2. Types of fire and fire extinguishers

How to use the Fire Extinguisher?

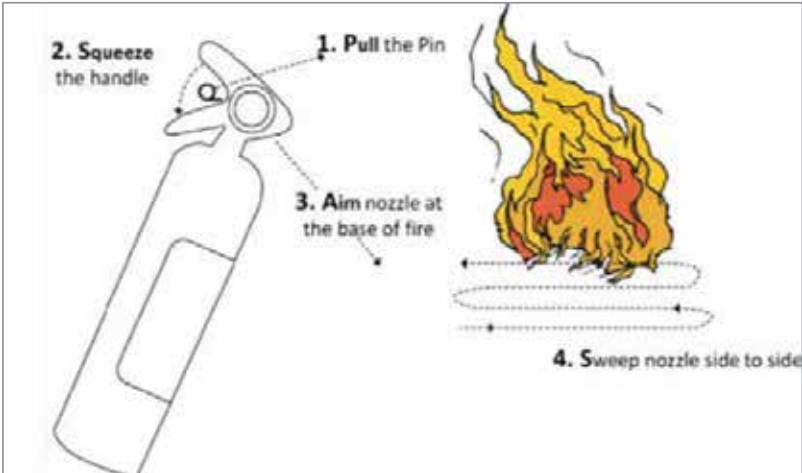


Fig. 6.2.3. Fire extinguisher

How to use the Fire Buckets?

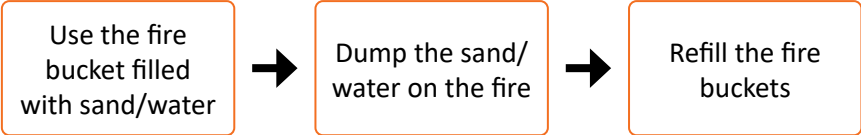


Fig. 6.2.4. Fire bucket

UNIT 6.3: Good Manufacturing Practices (GMP)

Unit Objectives

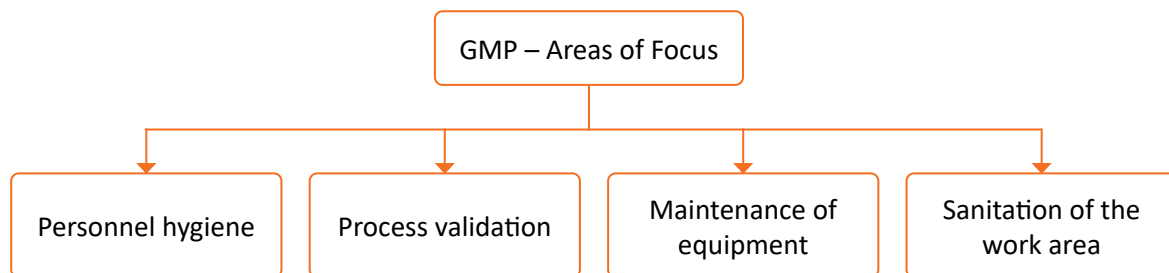


At the end of this unit, participants will be able to:

1. State the importance of safety, hygiene, and sanitation in the food processing industry;
2. Follow the industry standards to maintain a safe and hygienic workplace.

6.3.1 Good Manufacturing Practices (GMP)

GMP is a set of guidelines proposed by the Food Safety Standards Authority of India (FSSAI) to ensure the production of high quality and safe processed foods. It requires a qualitative approach towards manufacturing to reduce chances of microbial contamination, spoilage, and errors.



Area of focus	GMP
<p style="text-align: center;">Personnel hygiene</p> <div style="display: flex; justify-content: space-around;">   </div> <p><i>Fig. 6.3.1. Personnel hygiene</i> <i>Fig. 6.3.2. Facilities for toilets</i></p>	<ul style="list-style-type: none"> • Your organisation follows strict hygiene and sanitation guidelines • You are provided training on Good Manufacturing Practices (GMP) • You are in a sound health condition during working hours • You follow high standards of cleanliness • Your processing unit has enough facilities for toilets and wash stations
<p style="text-align: center;">Sanitation of the work area</p> <div style="display: flex; justify-content: space-around;">   </div> <p><i>Fig. 6.3.3. Designated area for keeping utensils</i> <i>Fig. 6.3.4. Sanitation of the work area</i></p>	<ul style="list-style-type: none"> • The processing unit where you work is located in a clean, pollution-free area • The entire processing unit is well ventilated and has adequate lighting • The entire work area follows high standards of cleaning and sanitisation • There is a designated area for keeping utensils and equipment. It is kept clean and pest-free at all times

Equipment maintenance



Fig. 6.3.5. Equipment maintenance



Fig. 6.3.6. Monthly schedule

- The equipment used for processing foods is protected against contamination from lubricants, metal fragments, fuel, and contaminated water
- The cleaning and maintenance of tools, materials, and equipment is an easy process
- The organisation follows a cleaning and sanitising drill as per daily, weekly, and monthly schedules

Process validation

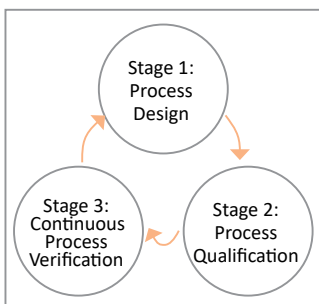


Fig. 6.3.7. Process validation



Fig. 6.3.8. Quality checks

- All processes of production, like raw material procurement, execution, storage, packaging, and logistics follow strict organisational parameters
- Quality checks are conducted at each step of production. This helps to ensure that food quality is maintained as per prescribed norms and standards
- The stock rotation of finished product follows the FEFO and FIFO methods. This is to ensure that there is a minimum chance of food spoilage. It will also help to retain the taste of processed foods

Scan the QR code or click on the link to watch related videos



<https://www.youtube.com/watch?v=RS4A-uczS6E&t=2s>

GMP, GHP & FSMS

UNIT 6.4: Food Safety Practices

Unit Objectives



At the end of this unit, participants will be able to:

1. State the storage requirements for raw materials and finished products;
2. Determine the quality of food and intake measures to prevent spoilage;
3. Follow stock rotation based on FIFO/FEFO.

6.4.1 Spoilage

Spoilage is a complex process caused by enzymes present in the flesh and by microbes that enter the flesh after death. Microorganisms can come from the marine environment, water pollution or contamination caused by improper handling. These microbes increase the rate of spoilage. Some can even cause illness.

For many sea food products, increasing the storage temperature from 32°F to 40°F can double the rate of spoilage. Factors such as size, post mortem pH, fat content, and skin properties can all impact the spoilage rate of fish stored in ice.

The fact that post mortem pH is usually higher in fish than warm-blooded animals may account for its higher perishability. In addition to bacteria and enzymes, the highly unsaturated fat in fish goes bad causing rancid or other off odours or flavours.

6.4.2 Selecting, Handling and Preparing Sea Food Safely

- **Food allergies** is a safety consideration that individuals should be aware of before selecting sea food products.
- **Proper cooking** is the most common and effective way to ensure food safety. This removes concerns from bacteria, viruses and/or parasites that could be present in sea food and other raw foods.
- **Heat stable toxins** can be a concern in sea food and other foods that are contaminated or temperature abused.
 - Proper cooking cannot be relied upon as an absolute control for these food safety hazards.
 - Improper handling could lead to formation of heat-stable microbial toxins or biogenic amines that cannot be removed with cooking.
 - When certain types of fish like tuna, mahi-mahi, and mackerel are temperature abused, biogenic amines like histamine can be formed which cannot be eliminated by cooking.
 - Value-added products liked stuffed, breaded, and battered items that are temperature abused could also contain heat stable toxins.
- **Temperature control is the key to ensure complete safety for these products.** All sea food products should be kept at refrigeration temperatures as close to 32°F as possible to prevent the growth of microbial pathogens and prevent toxin formation.

6.4.3 Specific Guidelines for Using Sea Food

- Purchase sea food products from a reputable establishment and avoid any products that an individual may be allergic to.
- Keep sea food cold (as close to 32°F as possible) from the time of purchase or harvest until you are ready to cook or prepare it.
- Store it on ice during transport and in the refrigerator
- Keep preparation areas clean
- Practice good personal hygiene
- Sea food is perishable; use it quickly
- Cook sea food properly (145°F for 15 seconds or until flaky and opaque – no longer translucent)
- Store leftovers properly at refrigerated temperatures (less than 40°F)

6.4.4 Stock Rotation System

- FIFO (First-In-First-Out) is a stock rotation system that dispatches processed food depending on the order in which it is produced.

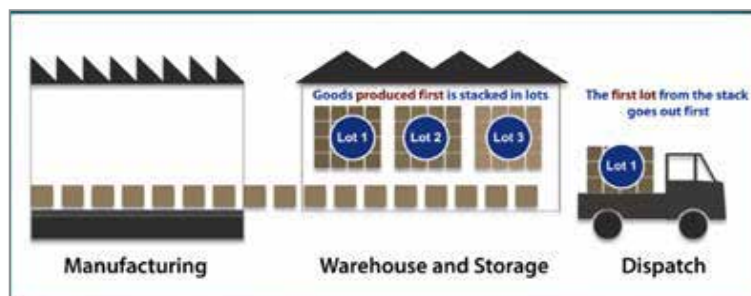


Fig. 6.4.1. FIFO stock rotation

- FEFO (First-Expired-First-Out) is a stock rotation system wherein products that need to be consumed earlier are shipped first.

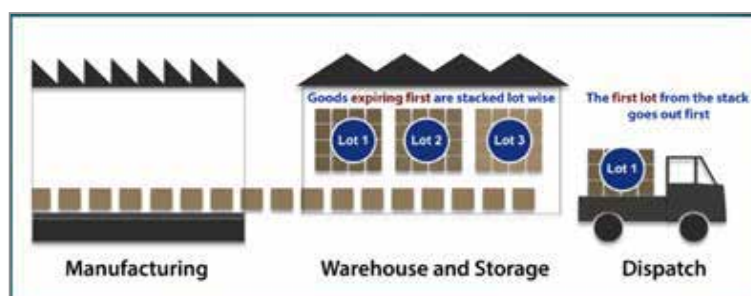


Fig. 6.4.2. FEFO stock rotation

- JIT (Just-In-Time): A system where finished product is dispatched to the distributor, retail industry or institution as soon as the product is ready. A carton of processed food can be stored for a maximum of 2 days in the storehouse.

UNIT 6.5: Hazard Analysis and Critical Control Point (HACCP)

Unit Objectives

At the end of this unit, you will be able to:

1. Follow HACCP principles to eliminate food safety hazards in the process and products.

6.5.1 What is HACCP?

Hazard Analysis and Critical Control Point (HACCP) is an international food safety regulation that is followed to reduce the risk of hazards in a food processing unit. It is a system that identifies possible hazards and controls them at various points of the production process. The HACCP is based on seven principles. They are:

Conduct a hazard analysis

- Evaluate the production process and identify the points where hazards (physical, chemical, and biological) may be introduced

Identify critical control points

- Identify the critical points in the process plan where a hazard may occur
- Plan preventive measures at that critical point to control the risk

Establish critical limits

- State the boundary line between safe and unsafe processes
- State the limit until which a critical point maybe controlled

Establish a monitoring system

- State the process of monitoring critical points and critical limits

Establish corrective measures

- Specify the corrective actions that should be followed when critical limits are crossed

State verification procedures

- State the verification process to check whether HACCP principles are applied and followed
- Test the HACCP plan and ensure compliance on a regular basis
- Check whether the HACCP plan helps to prevent hazards effectively

Follow record-keeping procedures

- Keep records of all the critical points
- Maintain a log of situations when critical limits were exceeded
- State the corrective measures that were applied
- Include records of the development and maintenance of the system

Example of an HACCP Plan

Operational step	Hazard	Control measure	Critical limit	Monitoring method	Corrective action	Responsibility	Record
Procurement of raw material	Physical (dirt, stone particles)	Supplier guarantee specifications established by quality assurance department	As per company internal specifications	Supplier guarantee certificate is visually confirmed	Reject materials if not accompanied by supplier guarantee	Store manager	Supplier guarantee
	Chemical (toxins, pesticides from raw material)	Relative humidity of the store to be maintained					
	Microbiological (high microbiological load of raw materials, presence of pathogenic bacteria)	FIFO system should be established		Monitor temperature and humidity of storage			Store temperature logs

UNIT 6.6: Introduction to Food Microbiology, Food Spoilage and Food Preservation

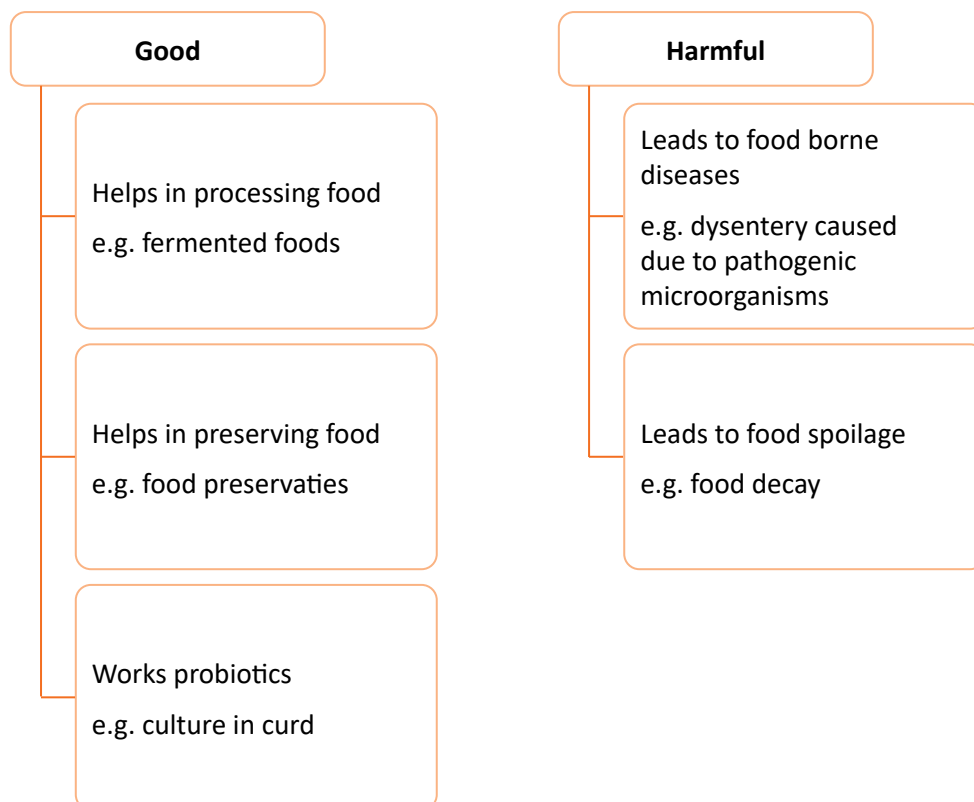
Unit Objectives

At the end of this unit, participants will be able to:

1. State the types of food microbes;
2. State the causes for food spoilage;
3. State the process for food spoilage;
4. State the criteria to check food spoilage;
5. State the need for food preservation;
6. State the different types of food preservation processes.

6.6.1 What is Food Microbiology?

Food microbiology is the study of microorganisms found in food products. Microorganisms are classified as:



6.6.2 Types of Food Contaminants

Food spoilage is the process by which the original nutritional value, texture, flavours, and the form of food is damaged. The food then becomes harmful and unsuitable for human consumption.

Some types of contaminants in foods are:

Types of contaminants	Examples	
Microbial	Bacteria, moulds, yeasts, viruses, etc. <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around;"> <p data-bbox="451 792 788 824"><i>Fig. 6.6.1. Microbial Contaminants</i></p> <p data-bbox="927 792 1264 824"><i>Fig. 6.6.2. Microbial Contaminants</i></p> </div>	
Biological	Hair, excreta, bone splinters, etc. <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around;"> <p data-bbox="451 1151 788 1182"><i>Fig. 6.6.3. Biological Contaminants</i></p> <p data-bbox="927 1151 1264 1182"><i>Fig. 6.6.4. Biological Contaminants</i></p> </div>	
Chemical	Pesticide residues, detergents, etc. <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around;"> <p data-bbox="451 1509 788 1541"><i>Fig. 6.6.5. Chemical Contaminants</i></p> <p data-bbox="927 1509 1264 1541"><i>Fig. 6.6.6. Chemical Contaminants</i></p> </div>	
Physical	Bolts from machinery, stones, glass, etc. <div style="display: flex; justify-content: space-around;">   </div> <div style="display: flex; justify-content: space-around;"> <p data-bbox="451 1868 788 1899"><i>Fig. 6.6.7. Physical Contaminants</i></p> <p data-bbox="927 1868 1264 1899"><i>Fig. 6.6.8. Physical Contaminants</i></p> </div>	

Process of Food Spoilage

The following process chart shows how food spoilage takes place:

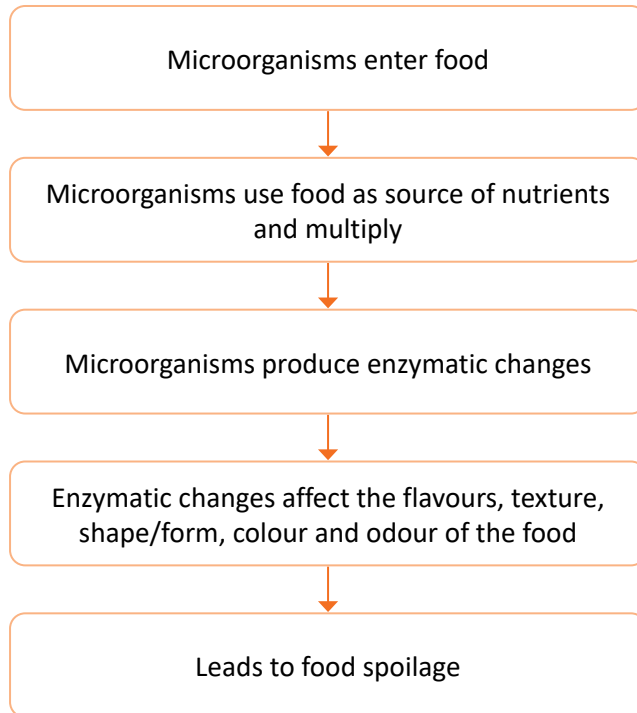


Fig. 6.6.9. Microbial spoilage of food



Fig. 6.6.10. Moulds on fruits

Classification of Food Based on Spoilage

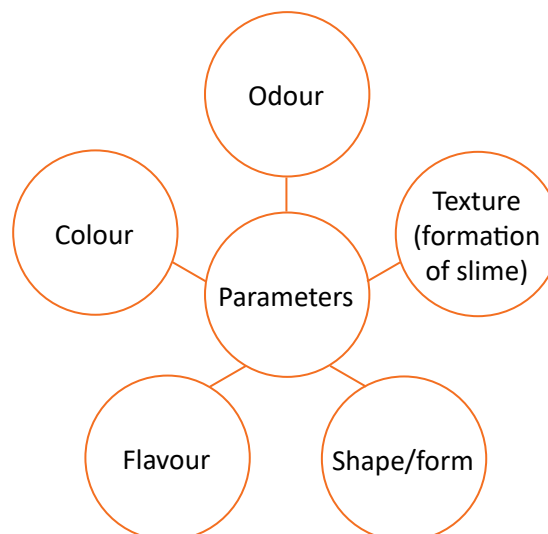
The following table shows how food is classified based on spoilage:

Non-perishable foods	Semi-perishable foods	Perishable foods
Does not spoil unless handled carelessly E.g.: Sugar	Spoils only if handled carelessly or stored improperly E.g.: Potatoes	Spoils readily and needs to be stored with special preservatives/processes E.g.: Milk

Table 6.6.1 Classification of Food based on Spoilage

Parameters to Check Food Spoilage

Following parameters will help you to check food spoilage:



6.6.3 What is Food Preservation?

Food preservation is the process by which processed and unprocessed food is protected against microbes, spoiling agents, and contaminants. The objective of preserving processed food is to:

- Retain the original nutritive value
- Retain the original colour
- Retain the original flavour
- Retain the original texture of the food
- Extend the shelf life of the food
- Ensure year-round availability
- Prevent or delay spoilage

Common Methods of Food Preservation

The most commonly followed methods of food preservation are:

- Fresh storage
- Cold storage
- Freezing
- Drying/ dehydration
- Concentration
- Chemical preservation
- Preservation with sugar
- Pasteurisation
- Sterilisation
- Filtration
- Irradiation
- Curing
- Fermentation
- Salting

Exercise



1. Identify the correct focus area of GMP from the list given below. Mark the correct option

GMP	Area of Focus	
a. All processes of production like raw material procurement, execution, storage, packaging, and logistics follow strict organisational parameters.	Personnel hygiene	<input type="checkbox"/>
	Sanitation of the work area	<input type="checkbox"/>
	Equipment maintenance	<input type="checkbox"/>
	Process validation	<input type="checkbox"/>
b. The equipment used for processing foods is protected against contamination from lubricants, metal fragments, fuel, and contaminated water.	Personnel hygiene	<input type="checkbox"/>
	Sanitation of the work area	<input type="checkbox"/>
	Equipment maintenance	<input type="checkbox"/>
	Process validation	<input type="checkbox"/>
c. Your processing unit has enough facilities for toilets and wash stations.	Personnel hygiene	<input type="checkbox"/>
	Sanitation of the work area	<input type="checkbox"/>
	Equipment maintenance	<input type="checkbox"/>
	Process validation	<input type="checkbox"/>
d. The entire work area follows high standards of cleaning and sanitisation.	Personnel hygiene	<input type="checkbox"/>
	Sanitation of the work area	<input type="checkbox"/>
	Equipment maintenance	<input type="checkbox"/>
	Process validation	<input type="checkbox"/>
e. The entire processing unit is well ventilated and has adequate lighting.	Personnel hygiene	<input type="checkbox"/>
	Sanitation of the work area	<input type="checkbox"/>
	Equipment maintenance	<input type="checkbox"/>
	Process validation	<input type="checkbox"/>
f. The organisation follows a cleaning and sanitising drill as per daily, weekly, and monthly schedules.	Personnel hygiene	<input type="checkbox"/>
	Sanitation of the work area	<input type="checkbox"/>
	Equipment maintenance	<input type="checkbox"/>
	Process validation	<input type="checkbox"/>
g. You are provided training on Good Manufacturing Practices (GMP).	Personnel hygiene	<input type="checkbox"/>
	Sanitation of the work area	<input type="checkbox"/>
	Equipment maintenance	<input type="checkbox"/>
	Process validation	<input type="checkbox"/>
h. You are in sound health condition during working hours.	Personnel hygiene	<input type="checkbox"/>
	Sanitation of the work area	<input type="checkbox"/>
	Equipment maintenance	<input type="checkbox"/>
	Process validation	<input type="checkbox"/>

2. Match the columns

Hazard Analysis	HACCP Principle
a. Plan preventive measures at that critical point to control the risk	i. Follow record-keeping procedures
b. State the boundary line between safe and unsafe processes	ii. State verification procedures
c. Specify the corrective actions that should be followed when critical limits are crossed	iii. Establish critical limits
d. Test the HACCP plan and ensure compliance on a regular basis	iv. Establish a monitoring system
e. Maintain a log of situations when critical limits were exceeded	v. Conduct a hazard analysis
f. Evaluate the production process and identify the points where hazards may be introduced	vi. Identify critical control points
g. State the process of monitoring critical points and critical limits	vii. Establish corrective measures

3. Arrange the right sequence of food spoilage

Procedure/ Steps	Order the steps (as 1, 2, 3, 4 and 5)
a. Leads to food spoilage	
b. Microorganisms produce enzymatic changes	
c. Microorganisms enter food	
d. Enzymatic changes affect the flavour, texture, shape/form, colour, and odour of the food	
e. Microorganisms use food as a source of nutrients and multiply	



7. Employability Skills (60 Hours)



Scan the QR code or click on the link to watch related videos



<https://www.skillindiadigital.gov.in/content/list>
Employability skills (60 hours)

















8. Annexure

Lists of QR Codes used in the PH



ANNEXURE - Lists of QR Codes used in the PH

S.No.	Chapter No.	Unit No.	Topic Name	Page No.	QR code(s)	URL
1	Chapter 1: Evaluate and Develop Entrepreneurship Skills	Unit 1.2 - Introduction to the Food Processing Industry	Orientation	7		https://www.youtube.com/watch?v=ofzhEPI0pSI
2		Unit 1.2 - Introduction to the Food Processing Industry	Overview of the Food Processing Industry	7		https://www.youtube.com/watch?v=w-Mu0EpUg-Cd4&t=19s
3		Unit 1.3 – Overview of the “Processed Food Entrepreneur” Role	Role and responsibilities of a Processed Food Entrepreneur	8		https://www.youtube.com/watch?v=nr_FM8esZJE
4		Unit 1.4 – Introduction to Entrepreneurship	Traits of an entrepreneur	12		https://www.youtube.com/watch?v=-Z0IT0h0IRwk
5	Chapter 2: Selection of Product and Business Planning	Unit2.1 - Business Planning	How to start a food business	51		https://www.youtube.com/watch?v=fzBX-BI-IWY
6	Chapter 3: Prepare for Start-up of Food Processing Unit	Unit 3.3 – Entrepreneur’s Memorandum	Entrepreneur’s Memorandum	85		https://dpiit.gov.in/index.php
7	Chapter 4: Start Food Processing Unit	Unit 4.2 – Food Processing Unit Setup	FSSAI License registration 1	115		https://www.youtube.com/watch?v=orvT-PKFeGe0

S.No.	Chapter No.	Unit No.	Topic Name	Page No.	QR code(s)	URL
8	Chapter 4: Start Food Processing Unit	Unit 4.2 – Food Processing Unit Setup	FSSAI License registration 2	115		https://www.youtube.com/watch?v=QV4GG-Go8Z6U
9		Unit 4.2 – Food Processing Unit Setup	Different types of packaging	115		https://www.youtube.com/watch?v=iTN-Rv0IZaCl
10		Unit 4.2 – Food Processing Unit Setup	FSSAI guidelines for packaging and labelling	115		https://www.fssai.gov.in/upload/uploadfiles/files/Packaging_Labeling_Regulations.pdf
11	Chapter 5: Complete Documentation and Record Keeping	Unit 5.1 – Documentation and Record Keeping	Documentation and Record keeping	137		https://www.youtube.com/watch?v=kcpGIH-BpphA&t=154s
12	Chapter 6: Food Safety, Hygiene and Sanitation for Processing Food Products	Unit 6.1 – Sanitation and Hygiene	Personal Hygiene	142		https://www.youtube.com/watch?v=gNEx-8P9UqPA&t=37s
13		Unit 6.3 – Good Manufacturing Practices (GMP)	GMP, GHP & FSMS	147		https://www.youtube.com/watch?v=R-S4A-uczS6E&t=2s
14	Employability skills (60 hours)	Employability skills (60 hours)	Employability skills (60 hours)	160		https://www.skill-indiadigital.gov.in/content/list

Notes



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